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A New White Metal.

A new alloy, which does not appear to tarnish more readily than ordinary white metal, and which is considerably cheaper, has just been discovered by Mr. W. Sharman, and it is thought probable that it will, to a great extent, supersede the various Brittania metals now in use. The alloy consists of tin, 16 parts; lead, 3 or 4 parts; zinc, 5 parts; and differs only from all similar compounds on record from the much larger percentage of zinc it contains. In the process of manufacture the zinc is first melted at as low a heat as possible, the tin is next added, and finally the lead. The whole is well stirred up with a green wood pole, to ensure perfect mixture, and to prevent oxydation, for which latter purpose a coating of borax and the addition of a little resin will be found useful. The whole operation must be conducted as quickly as possible, and excess of heat avoided. The proportions may be modified as required, more zinc giving less ductility, and more tin giving more flexibility, and a better color. For teapots and articles of a like character, the alloy composed of 16 parts tin, 3 parts zinc, and 3 parts lead, is preferable. These alloys being easily fusible, care must be taken in the selection of the solder. The new alloy can be rolled and spun, and will, therefore, be easy of application to a large variety of purposes.

Silver Door Plates.

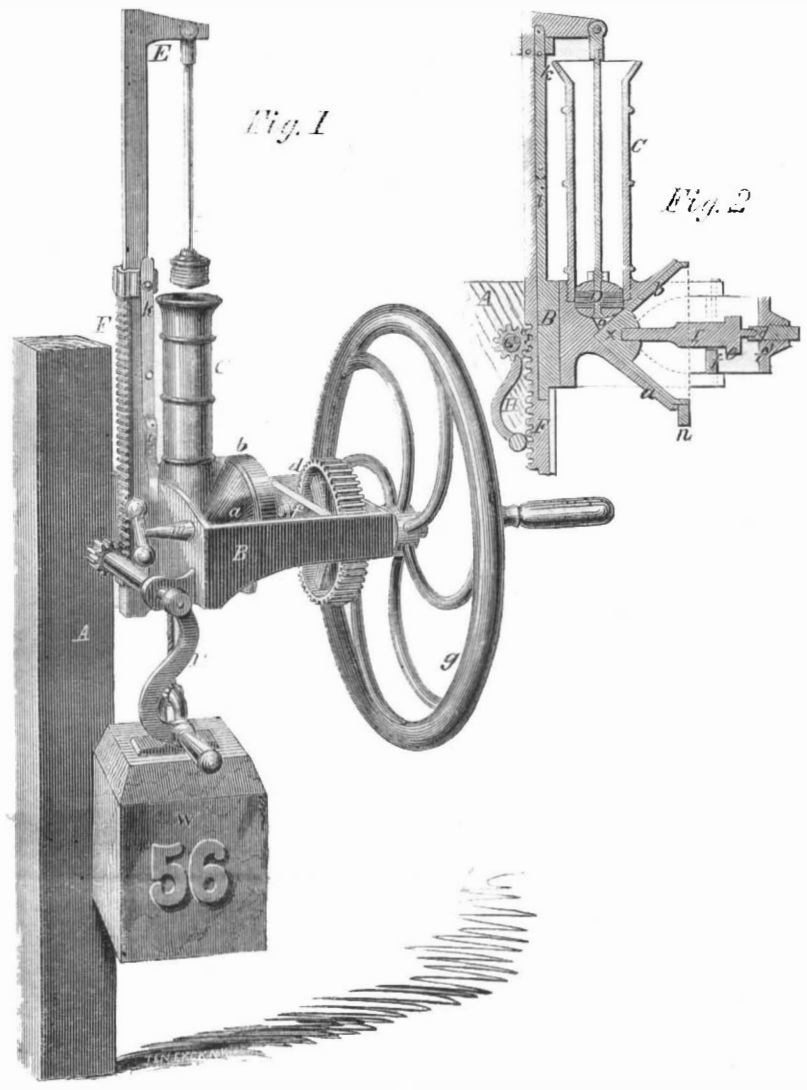
We notice the following item in an exchange, and we would make suggestions not contained in the paragraph, namely, that the ammonia should be very weak—about two teaspoonfuls of ammonia to a teacup of water:—

Housekeepers will, without doubt, thank us for informing them that the black sulphide of silver, which forms on plated and silver wares, door plates and knobs, may at once be removed by wiping the surface with a rag wet with aqua ammonia, and without the trouble of rubbing and scouring with polishing powders.

It may be well also to inform them, that this black film, which forms on silver exposed to sulphide of hydrogen, is no evidence that the silver is impure, for it forms as quickly on fine silver as on that which is alloyed with copper. We have known instances of good silver plate having been returned to the manufacturer, because it had been wrapped up in flannel, and we had occasion to explain that the sulphur came from the flannel, and would act with equal readiness on the finest silver.

After rain, much sulphide of hydrogen is disengaged from the soil of our streets, and it then blackens silver door plates very quickly. This black film, as before observed, is most readily removed by means of aqua ammonia. The same agent will be found very useful in cleaning gold chains and jewelry.

THOMAS'S PAINT MILL.



Although paint can be ground very finely and well with a muller and stone, yet the operation is very tedious and slow, and it has been found advisable in this, as in every other branch of manufacture, to introduce machinery. Our engravings illustrate a mill for grinding paint with expedition and evenness.

Fig. 1 is a perspective view of the mill, and Fig. 2 a vertical section of the same.

A is the post or support to which is bolted the main frame, B, which supports the operative parts, composed of a stationary hollow cone, *a*, and a conical rotating muller, *b*. Instead of employing a hopper to receive the semi-fluid to be ground, a force pump or equivalent apparatus is used. The cylinder of this pump is shown at C; this is screwed into an opening in the top of the grinding cone, *a*, which opening communicates with the interior of the grinding cone by the passage, *o*, and within the cylinder the piston, D, operates. This piston is hinged to an arm, E, that extends from a toothed rack, F, and over the cylinder. This arrangement allows the piston to be swung freely out of the way of the mouth of the cylinder, while the latter is receiving its charge of paint or material to be ground. The rack, F, slides freely up and down between the upright guides, *i i*, and engages with a pinion, G, fixed on a crank shaft, H.

Furthermore, a weight, W, of the necessary size is attached to the lower end of the rack, such weight by its gravitating power serving to depress the piston in the cylinder, and to force the liquid paint into the grinder or mill during the process of grinding. The muller, *b*, has a slot, which receives the flattened end of the rotating shaft, I, on which is fixed the pinion, *e*, that engages with the gear, *d*, driven by the shaft of the fly wheel, *g*.

The swinging frame, *f*, is hinged to the main frame, B, and is drawn up by the set screw, *m*, which operation forces the muller into the grinding cone at any desired pressure.

By means of the above described improved mill the paint or semi-fluid can not only be ground much faster than by the ordinary process, but as less grooving of the muller is necessary to make it feed, it will grind much finer, and greater durability of the grinding surfaces is obtained. The operator is enabled also to use the expansion of air in driving the material out of the cylinder into the grinder, for if the piston is raised out of the cylinder after most of the paint is ground, and again introduced therein, the compressed air expels the paint through the passage, *o*, and the grooves of the muller, so that a very trifling waste of material is sustained, an important consideration in grinding colors.

Operation.—By rotating the crank shaft, H, the rack, F, with the weight, W, and the piston, D, attached to the arm, E, are simultaneously elevated and held in elevation by the spring catch, *k*, the cylinder is then filled with the material to be ground, the piston is then let down, and presses upon the top of the paint by the full force of the weight, W. The muller is then put in motion and pressed into the mill, and as the ground paint reaches the edge of the muller, it is scraped off by the scraper, *n*, and drops into a suitable receptacle placed below to receive it.

It is the invention of Chauncey Thomas, of West Newbury, Mass., and was patented April 27, 1858. Any further information can be obtained by addressing Nichols & Thomas, proprietors and manufacturers, at the same place.

Improved Corn Harvester.

I. Reamer and H. Miller have invented a new corn harvester, by the first feature of which the cutting action of the knife is greatly enhanced, for when the knife comes in contact with the corn stalks, it cuts with an upwardly oblique cut owing to its being set with its cutting edge elevated, and the springs allowing it to give in an upward direction. Cutting the corn with an oblique upward cut is very essential, and is always practised when corn is harvested by hand on account of the root of the stalks offering a stronger resistance to cut against than is offered by the upper portion of the stalks in cutting downwards; and by the second feature, the perfect drawing in and bending down of the stalks to a position for being cut by the knife is ensured. The deposit of the cut stalks on to the platform, and the discharge of the same in bundles therefrom are accomplished very perfectly. It was patented last week. The inventors reside at Conrad's Store, Va.

Improving the Quality of Sugar.

G. J. Benson has recently secured a patent in England for an improvement in the manufacture of molded sugar, which consists in removing the sirups or liquids in which the crystals have been formed in the usual manner, and simply substituting or mixing therewith clear liquor or sirup, produced from refined sugar. This is well mixed with the crystals of sugar, and the proportion of liquor is such that the mixture will just run from a spoon. The process may be performed in a vacuum pan, or ordinary open pan, or a pan in which streams of air may be blown, or in any other suitable manner that will mix the whole intimately together.

Machine for Sorting Thread.

We would call the attention of silk manufacturers to the patent issued this week to Mr. Dimock, of Mansfield, Conn., for a new process of manufacturing silk and twist for sewing machines, which process insures an even thickness of thread throughout the spool or skein. This is a valuable improvement in the manufacture of twist, which will be duly appreciated by the operators of sewing machines, Measures have been taken to secure patents in several foreign countries.

CARELESS LETTER WRITERS.—From a Parliamentary report it appears that 2,024,057 letters were sent to the Returned Letter Office in England and Wales in 1857. Of these 264,253 were destroyed after every effort on discover the writers had failed. 25,115 letters contained money or some kind of valuable property, amounting in all to no less that $1,700,000. Out of this list the writers of 3,333 letters containing property of the value of $81,000 have not been found.

GRAIN TRADE OF CHICAGO.—The receipts of grain at Chicago for this season have been over 17,000,000 bushels, of which 15,000,000 bushels have been shipped off again by the lakes.

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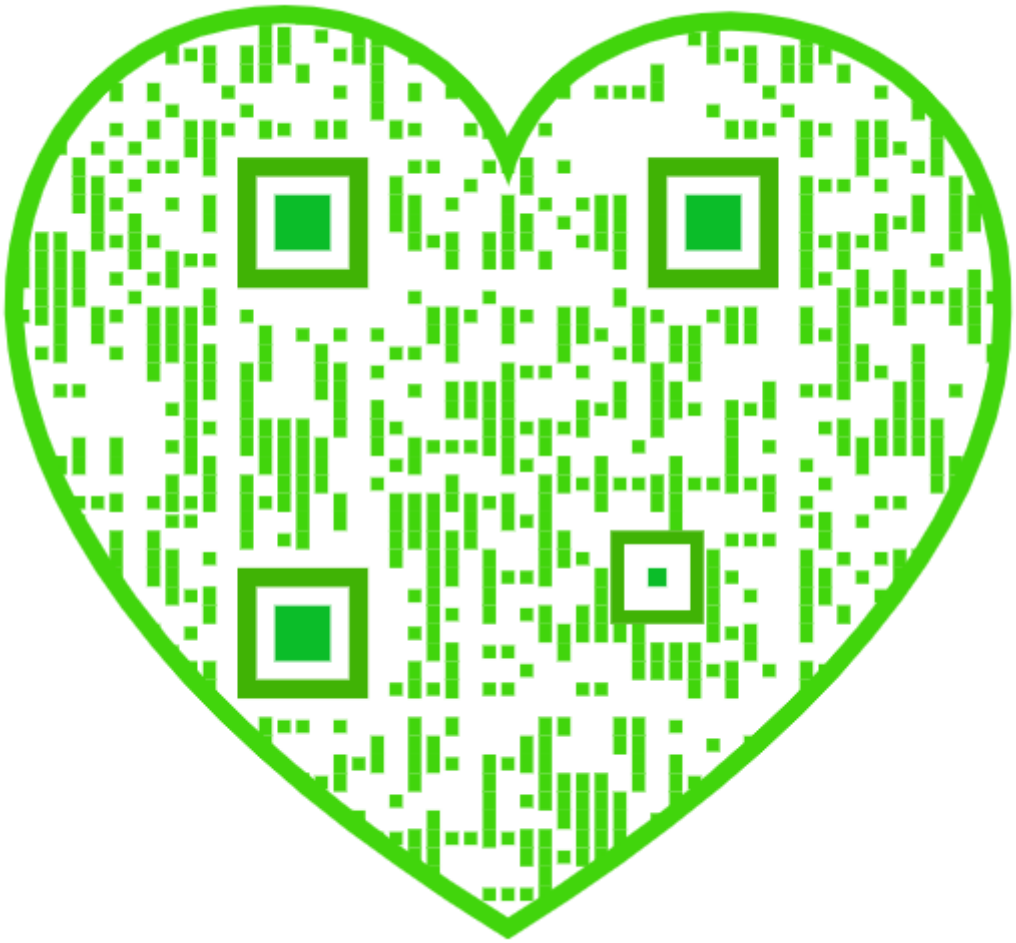

Patent Claims

Issued from the United States Patent Office

FOR THE WEEK ENDING SEPTEMBER 21, 1858.

[*Reported officially for the Scientific American.*]

*** Circulars giving full particulars of the mode of applying for patents, size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

LOCK—Christian Ackerman, of Newark, N. J. : I am aware of various claims on rotating bolts to locks, and therefore do not claim the mere rotation.

I claim the use of the fall, b, and lever, C, in their combination with the eccentric moving bolt, a, when constructed and operated as set forth.

GAS REGULATORS—Salmon Bidwell, of Chicago, Ill., assignor to the New York Car and Steamboat Gas Company, of New York ity : I do not claim such an apparatus as the patent of H. F. Beacon, described in Newton's Journal (conjoined series), Vol. 14, page 89, plate 5, as this invention is not suitable for my purpose, it being entirely inoperative from its construction in regulating the flow of gas under varying pressure.

But I claim the cock, F, operated by the diaphragm, C, rod, b, and spring, a, as described and set forth.

BRICK MACHINES—John Booth, of Mobile, Ala. : I claim the chambers, B and C, separated by the perforated floor, a, in combination with the spring blade, F, scraper, K, and reciprocating mold carriage, H, also constructed, arranged and operating substantially as and for the purpose set forth.

SHEARS—Joseph A. Braden, of La Grange, Ga. : I claim making the blades of triangular form in their transverse sections and fitting them to the handles, so as to be capable of being turned therein to present three different pairs of edges in an operative position, substantially as described.

[This invention consists in making the blades of scissors or shears with their transverse section of the form of an equilateral triangle, so that each presents three cutting edges ; and fitting them to their handles in such a manner that they are capable of being turned therein, when it is desired to bring a new pair of cutting edges into an operative position when one pair has been worn or blunted.]

PLOW PRESS AND DRILL—T. E. C. Brimby, of Simpsonville, Ky. : I am aware that presses and also drills have been employed in making moldboards of plows, and I do not claim any of the separate devices employed by me.

But I claim the above described press in combination with the drill for pressing and drilling the moldboards of plows, the whole being constructod, arranged and operated substantially as set forth.

TRUSS PADS—C. Campbell, of St. Louis, Mo. ; I do not claim the mode or art of casting or molding gutta percha into any desired shape.

But I claim the application of pads made of gutta percha in the manner described in the specification for the prevention of the escape of viscera through hernial openings in the human body.

PORTABLE FIELD FENCE—P. S. Carhart, of Collamer, N. Y. : I claim, first, Coustructing the panels of a portable fence, having their bearings on sills or their equivalents below, shorter at their tops than their bottoms, substantially in the manner and for the purposes specified.

Second, In combination with panels constructed as described, I claim the sills provided with one or more cross blocks, arranged to project between or on either side of the end battens of the panels, to support and guide them, as set forth.

Third, I claim the employment for tightening up the panels and uniting them firmly and expeditiously with the sill of the key or wedge, f, in combination with the brace or strap, e, substantially as specified.

ROTARY PUMP—M. R. Clapp, of Seneca Falls, N. Y. : I am aware that corrugated or cogged pistons have been used, and such alone I do not claim.

But I claim the combination and arrangement of the revolving toothed pinion, E, and cylinder, C, with the abutment, K, or its equivalent, cylindrical case, A, and internal gearing, b, substantially as and for the purposes set forth.

NUT MACHINE—R. H. Cole, of St Louis, Mo,: I claim first, The arrangement of two knives, G G, whereby they are made to act simultaneonsly on each side of the bar, so as to cut the nut blank entirely off and deposit it between the vibrating jaws or formers, K K, substantially as described.

Second, And I also claim the arrangement of the vibrating dies or formers, K K, whereby they are made to press the sides of the nut to the required form while carrying it from where it is cut off to where it it is to be punched on the die, O, substantially in the manner set forth.

Third, And I also claim the spring, N, as arranged with the aforesaid jaws or formers. whereby they are opened by a yielding force, as described.

Fourth, I do not claim facing the dies or punches with steel, as they are both made entirely of that metal; but I claim making them in three separate pieces or parts substantially as described, so that I can renew one part and retain the other so as to economize material.

RAKING ATTACHMENT FOR HARVESTERS—P. S. Crawford, of Marengo, Ill. : I do not claim, broadly or irrespective of the arrangement shown, a rake or system of rakes arranged or operated, so that one will sweep over the platform and rake a gavel into the other rake, the latter assisting in discharging the gavel from the platform, for such device has been used, and the plan carried out in various ways.

But I claim the combination of the rakes, O P, the former being attached to the box, I, and the latter operated through the medium of the gearing, H J K, placed within the box, I, and the bars, L M, and arm, N, the whole being arranged as and for the purpose set forth.

I further claim the supplemental or discharging rake Q, placed over the rake, P, and used in connection with the springs, i, of rake, P, substantially as described.

[This is a novel means employed for operating the rakes, whereby the grain as it it is cut is taken from the platform of the reaper and discharged in gavels on the ground at suitable points, by a very economical mechanism, that may be readily applied and will work efficiently in all cases.]

EXPANSIBLE FLOATS FOR LIFEBOATS—Charles Legros, of New York City : I claim constructing the outer sides or side surfaces of the floats of some non-corrosive metal, while the top and unexplored surfaces are formed of rubber or other air-proof flexible material, substantially as and for the purposes set forth.

ROOFING CEMENTS—G. W. Cushing, of Chicago, Ill. : I claim the roofing cement composed of asphaltum, coal tar, and the residuary gum specified, combined in about the proportions stated.

[The component parts of this cement are asphaltum, coal tar and the pitchy residue known as "residuary gum," which is separated from the fatty substances in the manufacture of stearic acid for what are known as "star candles" or for other purposes.]

INKSTANDS—Samuel Darling, of Bangor, Me. : I claim an inkstand, with a dipping cup and reservoir, arranged and constructed substantially as described.

BURGLARS' ALARM—A. W. Decrow, of Bangor. Me. : I do not claim, broadly, an alarm bell attached to or connected by mechanism with a till or drawer, so that an alarm will be sounded when the drawer is opened, for such devices have been previously used.

But I claim the slides, D E F, tumblers. G H I, bar or bolt, J, and an alarm formed of the clock movement, C, and bell, D, combined and arranged to operate substantially as and for the purpose set forth.

I further claim the particular manner, as shown, of operating the tumblers, G H I, from the slides, D E F, to wit, by means of the oblique ledges, n, formed on the slides and the adjustable pins, p, which pass through the tumblers, whereby the tumblers are not only actuated, but changes also allowed to be made, so as to require a varying movement of the slides in order to throw back the bolt, J.

I also claim connecting the tumbler, G, and bolt, J, with a bar, L, substantially as shown, to serve as a check or supplemental device to give an alarm, in case an attempt is made to open the drawer by force, or otherwise without tampering with the slides, D E F.

[This invention consists in arranging a series of slides and tumblers with a bolt and an alarm movement, whereby an alarm will be sounded, when an attempt is made to open the till, without having recourse to the bolt that locks it, or by actuating it in an improper way. The invention is designed to effectually prevent the tills of store counters being suddenly opened and rifled by adroit thieves, when the back of the proprietor or clerk is turned, a species of sharp practice of daily occurrence in large cities.]

MACHINES FOE SORTING SILK OR OTHER THREAD ACCORDING TO ITS SIZE—Ira Dimock, of Mansfield Center, Conn. : I claim, first, A device by which the varying thickness of the thread is made to shift a traversing guide or its equivalent, to distribute the thread upon a winding apparatus according to its thickness, consisting of two surfaces, one of which is caused to receive a reciprocating motion through the agency of variations in the thickness of the thread passing between them ; whether the said surfaces consist of the peripheries of an eccentric wheel and roller, as represented in the drawing and described, or have any other form which permits of their operation in an equivalent manner.

Second, The movable carriage, T, with its opening, 7 and notches, 7' 7', applied in combination with the series of spools, S1 S2 S3, and the bobbin, D, or winder on which the thread has been distributed and arranged according to its size or thickness, and operating substantially as described to stop the winding operation as the unwinding of the thread from said bobbin or winder varies beyond certain parts thereof.

[A notice of this improvement is given in another column.]

CIGAR WRAPPERS—Henry Durell, of Morrisania, N. Y. : I do not claim converting the fibrous or ligneous parts of the tobacco plant into sheets or leaves.

But I claim the removal of the coloring and flavor of the plant by means described. then reducing to pulp and thence to paper the fibrous or woody parts of the plant in any known way, and then re-charging said paper with the solution or volatile matters previously removed therefrom in order to prepare said paper to be used as wrappers for segars.

MACHINES FOR WASHING COAL—J. P. Evans, of Borough of Hazelton, Pa. : I claim, first, Forming a series of slits, D', at the lower end of the corrugations, C 2, next the triangular openings, C 3, so as to enable the thin pieces of slate to discharge themselves automatically through them, substantially as described.

Second, I claim the combination and arrangement of a tappet or tappets, E', with and in the relation to the corrugated bottom, C 2, of the chutes, C, and the slits, D', and triangular openings, C 3, at the lower ends of the same over which they are suspended, as set forth, the said tappet or tappets being provided with adjustable weights, G, to regulate their resistance to the coal, substantially in the manner and for the purpose before described.

Third. I claim the arrangement of the upright pipe, N, and right angled perforated pipe, P, at its lower end in the relation to the corrugated bottoms of the chutes described, said perforations being formed on the lower portion of its periphery as stated for subjecting the coal to a thorough washing in its descent, as set forth.

[This is a very simple and efficient machine for washing coal.]

PUMPS—S. H. Gray, of Bridgeport, Conn. : I claim having the upright or stand B, of the pump handle provided with a claw or hook, a', at one side of its lower end, and having a bolt, c, pass through the lower part of the upright or stand, the bolt being provided with a curved or hook-formed head, d, the above parts being used in connection with flanch, a, on the upper end of the pump cylinder, as and for the purpose set forth.

I further claim, in connection with the upright or stand, B, the cover, C, arranged as shown, so that it may be secured to the cylinder, A, by the upright or stand, as shown and described.

[The handle of this pump is adjusted in such a way relatively with the spout as to lessen the cost of construction, and ensure better working. It will be found a great improvement in hand reciprocating pumps.]

PUMPS—Foster Henshaw, of Washington, D. C. : Having fully described the construction and operation of my improved pump, and disclaiming any such device as represented in the patent granted to John Tapley, what I claim is, first, Operating the piston by a curved slot, possessing the characteristic features described and arranged or formed in a vibrating handle, substantially as set forth.

Second, In the construction of lifting pumps, the combination of three or more valves, arranged and operating as before described.

Third, The arrangement of washes. I I, formed as specified, with the series of valves, substantially as and for the purpose set forth.

Fourth, Casting in the well pipe a series of steps, essentially as described.

APPARATUS FOR APPLYING SOLES TO BOOTS AND SHOES—Jacob Jenkins, of Charlestown, Mass. : I do not claim an elastic bed and a sole adjusting cavity or space, nor do I claim constructing such sole adjusting cavity with adjusting sides or jaws, as such have been the subjects of claim in another application for a patent which I have made.

But I claim the application of the rocker jaws or jawholders to the elastic bed, whereby the latter when forced downward is made to draw the jaws towards one another in manner as explained.

I also claim the combination of the elastic cushion or sole pressure with the elastic bed, A, and a mechanism for forcing the shoe down upon the said bed.

I also claim the combination of the rocker-bearer, H, and its screws I I, with the holding lever F, or its equivalent, and to operate therewith, substantially as specified.

I also claim the contrivance shown in Figs. 7 8 and 9, and as above described, to be used in manner and for the purpose specified.

DENTISTS' CHAIRS—Alex. M. Holmes, of Morrisville, N. Y. : I claim, first, The foot-rest. O, arranged with the slides, j j, racks, n, pinions m, and palls, o, substantially as described.

Second, The supplemental back, P, attached to links q, which are fitted in the slot, p, of the back. c, and actuated by the set screw, s, substantially as set forth.

Third, The adjustable head rest formed of the slide, u, pinion, w, plates, Q R, and a' b', arranged relatively to each other and applied to the back, c. substantially as set forth.

[The standard of this chairis formed of two parts connected by a universal joint, and arranged with a clamp of novel construction : the standard is also connected to a revolving base. The chair is also provided with an adjustable foot rest, an adjustable head rest, and supplemental back, the whole being arranged so that the body of the chair may be rotated and also inclined in any direction, and secured in varying positions, that the operator may place the patient in the position most comfortable and conducive to the success of the operation with great facility.]

SMUT MACHINES—Hiram Hopkins, of Evansville, Ind. : I am aware that scourers have been constructed in various ways and used in connection with blast spouts, and I therefore do not claim separately any of the parts irrespective of the construction and arrangement of parts shown and described.

But I claim the scourer constructed of the vertical bars, F, provided with radial projections. h, at their inner sides, and the arms. H, provided with ledges, K, and attached to the shaft, B, when said scourer thus constructed is enclosed by a box. M, and arranged relatively with the blast spouts, J K L, aud fan, D, to operate as and for the purpose set forth,

[In this machine a peculiar scourer is employed in connection with blast spouts and a fan, so that the effectual cleaning of the grain from smut and other impurities and foreign substances will be easily and perfectly performed.]

WASHING MACHINE—H. R. June, of Millport, N. Y. : I claim the combination of the revolving rubber, C, having alternate slats, d d d, and receding boards, f f, as described with the rubber, E, constructed and operating in the manner specified.

I also claim the elastic pivot rod, m, operating in the manner and for the purpose set forth.

NEEDLES FOR KNITTING MACHINES—J. K. Kilbourn, of Pittsfield, Mass., and E. E. Kilbourn, of Norfolk, Conn. : We claim the improved knitting needle having a secondary groove in its stem, substantially as set forth.

MACHINE FOR CUTTING METAL BARS—D. R. Knowles, of Center Groton, Conn.: I claim the bed piece, A, provided with the clamp, B, block or rest, C, slide, D, having the cutting tool, E, attached and connected with the lever, G, in combination with the automatic feed movement formed of the adjustable lever, H, palls, I, ratchet, J, and screw shaft, K, connected with the block or rest, C, the whole being arranged to operate conjointly as and for the purpose set forth.

[The object of this invention is to obtain a portable machine, and one that may be operated by a small expenditure of power, for cutting metal bars transversely with a clean, smooth cut. The invention is designed for the use of blacksmiths, repairers of railroads, and others, who cannot employ large machinery for such purposes. It consists in attaching a proper cutting tool to a reciprocating slide, which is connected with a lever, and fitted in a rest, which has an automatic feed movement given it by the motion of the lever.]

BRUSH CYLINDERS FOR SPREADERS, COTTON GINS, &c.—A. M. Lampher, of Gloucester, N, J. : I am aware that metallic fans have been used on the ends of a cylindrical brush in the cotton gin, as described in E. Carver's patent, and I am also aware that brushes have been arranged around the periphery of the end of the cylinder, and that such an arrangement was patented by B. D. Gullet, in 1858, but while I believe I can prove priority of invention over Gullet, I deem my arrangement essentially different from an improvement upon his, as it combines the advantages of the fans of Carver, with the protection against fire attained by Gullet. I therefore claim the brushes on the ends of the cylinder when arranged substantially as above described, for the purpose of preventing the filaments of cotton or other fibrous substance from becoming entangled in the journals and for preventing accidents by fire.

SELF-ACTING WAGON BRAKE—A. Larrowe, of Cohocton, N. Y. : I am aware that self-acting brakes having a wedge-shaped rubber for self-tightening on the forward motion of the wagon, and self-releasing on the backward motion are not new, such therefore I do not claim.

But I claim constructing the rubbers with the flanges on each side operating loosely in grooves in bar, B, and resting on springs, h, for allowing the rubber to rise upon an inclined plane, and relieve the friction of the wheels when backing the wagon and for replacing the rubbers, the whole operating as described and for the purposes set forth.

HORSE SHOE—John Maddock, of Bloomington, Ill. : I claim a nailess horseshoe, provided with lugs. a, or their equivalents formed on the upper side of the sole, A, when used in connection with corresponding projections, b, formed on the inner side of the upper flange B the former being made to fit cavities formed in the horse's hoof, and the latter into grooves, c, formed for their reception in the sole, A, the whole being constructed and secured together in the manner and for the purposes substantially as set forth.

CANAL BOAT—John McCausland, of Kingston, N. Y., and Jefferson McCausland and James McCausland, of Esopus. N. Y. : What we claim in the construction of canal boats and other flat-bottomed and vertical-sided vessels is, first, Interposing the bilge timbers between the floor timbers and the side timbers, substantially as and for the purposes set forth.

Second, Beveling the edge of the bilge timbers and forming a face on either side of the beveled face for the fitting on of the bilge plank in a gradually rounding line, as described.

Third, The second dovetail in the side timbers, with the chock between the dovetailed faces and the bilge timber, as an arrangement of means for adding strength to the vessel, as set forth.

MACHINES FOR CUTTING GRASS, &c.—C H. McCormick, of Chicago, Ill. : Disclaiming such combination of guard fingers and sickle as is shown in Jonathan Read's machine, patented March 12, 1842, what I claim is the combination of the sickle, having the scolloped or indented edge and serrated teeth, with a continuous series of fingers having the back reversed angles for supporting the grain or grass to be cut to the edge of the sickle both aboye and below the edge or above the edge only, substantially as described.

I also claim cutting out the middle of the upper part of the fingers that project over the sickle, as described in combination with the vibrating sickle, as described for the purpose specified.

HARVESTERS—McClintock Young, Jr., of Frederick, Md. : I claim the combination of the handle. J, shaft, D, arm, L, pitman, M, and guide, R, or their equivalents, when arranged and operated substantially in the manner and for the purpose specified.

I also claim making the gatherers, F, adjustable on the arms, E, of the reel, as and for the purpose specified.

MODE OF PREVENTING NUTS FROM UNSCREWING—S. Noblet, of Halifax, Pa. : I claim preventing bolt heads or nuts from turning by inserting below them a flexible metallic washer, one end of which is turned against the head or nut, and the other held immovable in place, substantially as described and represented.

CHURN—Andrew Ralston, of West Middleton, Pa. : I claim the arrangement of the openings, o and v, in the circular part of the fan or beater case, the valve, x, the gathering valve, h, the conductor, u, the whole being arranged and combined as described and represented for the purpose specified.

LAMPS—C. Reichmann, of Philadelphia, Pa. : I claim in combination with the lamp, the slotted open bell shaped cap m, when so constructed, arranged and operating as to allow light to be deflected downward, substantially in the manner and for the purpose set forth and explained.

ROTARY HARROWS—Jabez Robins, of Boston, Mass. : I am aware that loaded frames or weights have been previously used and applied to rotating harrows, and I therefore do not claim broadly such device.

But I claim the two harrows, A C, placed one within the other, and connected by the concave rollers, d, and bead, l, in connection with the draft beam, D, and frames, E F, provided with the rollers or weights, G H, the whole being arranged substantially as and for the purpose set forth.

[This invention consists in the employment of two annular rotating harrows, placed one within the other, connected in a peculiar way, and provided with weights and a draft beam, the whole being arranged so as to obtain a very simple and efficient implement.]

WATER WHEEL—Alpha Smith, of Sanquort, N. Y. : I am aware that curved buckets have been used and applied to horizontal water wheels in various ways ; and I am aware also that buckets have been placed between conical shells. I therefore do not claim broadly the parts above named.

But I claim constructing the buckets, C, with ledges or prominences, d, the buckets being curved, and fitted between the shells, a d, which form the body of the wheel, A, and arranged relatively therewith, substantially as and for the purpose set forth.

[In this wheel the buckets are of curved form, and are provided with ledges or projections, arranged so that each individual bucket will virtually consist of a series of buckets, against which the water will act successively in its passage through the wheel, and a corresponding relative speed be observed between the water and the wheel at all points]

ROTARY VALVE FOR STEAM ENGINES — Thomas Stewart, of Philadelphia, Pa. : I do not claim generally a rotary valve for the induction and eduction of steam.

Neither do I claim generally mounting an independent cut-off upon the upper side of a valve.

But first, I claim making a rotary valve with an independent cut-off applied thereto, constructed, arranged and operating substantially in the manner set forth.

Second, I claim constructing the said rotary valve with two or more sets of ports or ways therein, as described, for the induction and eduction of the steam, so as to enable me to cut off the said steam at any required part of the stroke, without producing any connection with the opposite side of the piston when the steam is cut off short, as set forth and described.

ROTARY HARROWS—Salathiel S. Thompson, of Heller's Corners, Ind. : I am aware that rotary harrows have been previously invented, and I therefore do not claim broadly rotary toothed wheels for such purpose.

But I claim attaching the toothed wheels, D D, to the frame, A', formed of the bars, d d, hinged together or connected at their front ends by a swivel joint, a, and having their back parts attached to bars, e' e', connected by a pivot, f, and secured in proper position by the segments, g, and pins, g', substantially as and for the purpose set forth.

[Two harrow wheels are attached to a frame constructed and arranged in a novel way, whereby the wheels may be adjusted in a perfectly horizontal plane, so that they will, as the implement is drawn along, remain stationary, or have no rotary motion, and also rendered capable of being adjusted more or less in an inclined position, so as to obtain, by the draft movement, a greater or less rapid rotation of the wheels, as may be desired.]

EYELET FASTENINGS FOR LADIES' SKIRTS—W. S. Thomson, of New York City : I claim the use of the H-shaped washer or fastener, or equivalent, in combination with an eyelet, as a means of fastening together the straps and hoops of elastic skirts, substantially as set forth.

COTTON GINS—John L. Tuttle, of Bridesburgh, Pa. : I claim so combining a toothed cylinder with an open breast, that allows the fiber to pass through it, but holds back the seeds, as that the cylinder shall work against the edge of said open breast, and carry the fiber past it, whilst the seeds shall roll up against the surface of said breast, and draw the lint that has not been taken from them up through the openings, whence they are turned over, and returned again and again by the action of the cylinder to the breast until divested of all their fiber, substantially as described.

CORN PLANTERS—Charles Van Houten, of Sunbury, Ohio : I claim first, The employment of the hinged, adjustable and laterally sliding hopper, and share frames, E, furnished with a spring stop or catch, M, in combination with a long transverse pinion, S, and the propeling axle, C, substantially as and for the purposes set forth.

Second, The combination of the hinged grated apron, J, with the sub-soiling covering shares, I, and furrow opener, H, substantially as and for the purposes set forth.

[In this machine the grain can be planted regularly in hills or drills, each grain being conducted into the soil by a channel in the bottom of the hopper and a narrow tube leading from the same to the ground. After the corn is planted it is covered with light pulverized soil by shares which subsoil, and have a pulverizing grated apron attached to them. The corn tubes and hoppers can be adjusted very readily out of operation. We regard the whole arrangement as a good one for planting corn.]

MACHINE FOR CUTTING VENEERS—Gilbert Bishop, of Fairfield, Conn., assignor to Edward White, of New York City : I claim first, The cutting of veneers from opposite sides of the log, by knives, arranged and operating in opposite directions, so as to cut with the grain of the wood.

Second, The construction and arrangement of the diagonally-faced side pieces, D' D'' D''', and the sliding frames, g' g g, in connection with the knives, so as to give the thrust of the knives into the center of the log, and thus cut the veneer clear from the log.

Third, The arrangement of the wheels, H H, in combination and connection with the sliding frames and knives, so as to produce the drawing cut at the same time that the knives are being thrust in upon the log.

Fourth, The combination and arrangement of cam, 19, the pair of bars, 13, 14, the connecting rod, 12, and vibrating arm, 11, and pawl and ratchet, so as to operate in the manner described, to raise or lower the feed screws.

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APPARATUS FOR COLORING PAPER, &C.—Charles Williams, of Philadelphia, Pa. : I claim distributing or laying the color in the process of marbling or coloring paper, by means of an apparatus constructed so as to operate substantially in the manner and for the purpose described.

SKATE IRONS—C. A. Williams, Robert Williams and G. A. Morse, of Bloomfield, Me. : We do not claim that portion of the studs included between the runner and the wood.

We do not claim the collar, C, nor the nut, N.

Nor do we claim any heel spur which is not a continuation of a stud that is solid to the runner.

But we claim that portion of skate studs (solid to their runners) above the collars, C, upon which is cut the screw thread, T, in the manner and for the purposes substantially as set forth in the description.

GAS BURNERS—A. H. Wood, of Boston, Mass. : I am aware that metallic plates or spreaders have been attached to oil lamps, for the purpose of facilitating the capillary attraction, and thereby aiding combustion, but metallic plates or spreaders which conduct the heat to a hight above and beyond the orifice of the burner have never heretofore been attached to gas burners, and consequently I shall claim the combination with a gas burner, of the metallic spreaders or flanges, constructed as described. This arrangement of the spreaders has the effect of conducting the particles of coal tar, &c., that obstruct the orifices of gas burners as usually constructed, to the points of extreme heat, which in this case are in the flanges or spreaders, instead of in the orifice itself, as in other gas burners, thereby drawing, as it were, all the impurities from the orifice of the burner, and consuming them on the spreaders or flanges, leaving a kind of ashes upon the same, which can readily be removed.

I claim the combination with a gas burner of metallic flanges or spreaders, arranged near and above the orifice of the burner, as described, for the purpose of spreading the flame and consuming the impurities of the gas, whereby the orifice is kept clear, as set forth, and this I claim whether the conducting rods be used or not.

SAW MILL.—John Pemberton, deceased, late of Jonesborough, Ind., assignor to Lemuel Pemberton, of said Jonesborough : I do not claim as new the devices below enumerated, but simply their relative arrangement, as specified, for the purposes set forth, to wit: first, The roller, T, ropes, t and u, to raise the bars, M and M', in combination with the pin, b, slide, X, lever, w', bar, N', and rock shaft, P, with its arms, rod, q, and lever, q', the whole being so constructed and arranged as to throw the feeding out, and the backing devices into gear, by operating the lever, e', and move the gate or valve to reduce the speed of the mill at the proper time, or after the saw cuts through the log.

Second, The arms, J, rock shaft, S', and bar, S, in combination with the projection or stop, e, connected to the lever, E, or its equivalent, to turn the ratchet wheel shaft and traverse the rack to set the log, as described.

Third, The ratchet wheel, F', bent lever and pawl, G, in combination with the pin, f, or its equivalent, in the lever, F, to stop the ratchet wheels when they have moved far enough, so as to prevent the log from being moved too far when it is set for a new cut.

Fourth, The pin, n, in the head block, and slide, X, in combination with the lever, W, which releases the hook, V', to let M' M descend to increase the speed of the mill, as described.

Fifth, The rod, a, and stop, L, in combination with the slide, Y, and lever, U, so constructed and operated as to hold up the bar, M, after the log is sawed, and prevent it from descending and increasing the speed of the mill, and at the same time stop the apparatus which sets the log.

TEA POTS—William Austin, (assignor to himself and William Obdyke), of Philadelphia, Pa. : I do not desire to claim the use of an interior casing for confining the tea in the inside of the same.

But I claim the plunger or presser, D, in combination with the interior casing, B, the whole being arrranged in the manner set forth, or any equivalent to the same, and for the purpose specified.

AUTOMATIC PAPER FEEDER FOR PRINTING PRESSES—William Bullock, (assignor to George W. Taylor), of Newark, N. J. : I claim operating the hands, or their equivalents, which effect the feeding of the sheet of paper in manner substantially as set forth, so that they have a greater capacity for moving the sheet than is necessary for the purpose.

I also claim controlling the operation of the hands, or their equivalents, upon the sheets of paper, by mechanism whose operation is dependent upon the position of the sheet being fed, so that the length of time during which the hands, or their equivalents, are permitted to act upon each sheet of paper does not bear any fixed relation to the movements of the other parts of the printing press.

I also claim intermitting the operation of the hands, or their equivalents, upon the paper, while the latter is being drawn into the press by mechanism acting substantially as set forth.

I also claim effecting the progressive movement of the pile of paper by mechanism whose operation is dependent upon the position of the pile, substantially as set forth.

I also claim the combination of the flap guides and nozzles, or their equivalents, for stopping the movement of the forward edge of the sheet, and for releasing the same, in the manner described.

I also claim moving sheets of paper by automatic rubbing hands, or their equivalents, constructed substantially as set forth.

I also claim operating the stop cocks of the air cylinder and the flap guides by a cam, or its equivalent, whose movement is coincident with or bears a fixed relation to the movement of the fingers which draw the paper into the press.

SEWING MACHINES—Jonas Hinkley, of Huron, Ohio, assignor to himself and F. A. Wildman, of Norwalk, Ohio : I claim, first, The method of operating the feeding arm or cloth mover, by the combined action of the pivoted bow, K, pressing lever, N, flexing strap, O, and vibrating plate, D, or its equivalent, as set forth.

Second, Mounting the vibrating plate, D, which imparts motion to the loop-forming hook and feeding mechanism, upon spring arms, n, arranged at right angles to a longitudinal spring, H, for balancing said plate in its vibration.

Third, Mounting the spool, T, upon a spindle having elliptical-shaped springs, which extend into and through the eye of the spool, as and for the purposes specified.

MACHINES FOR PEGGING BOOTS AND SHOES—B. F. Sturtevant (assignor to himself and Elmer Townsend), of Boston, Mass : I claim, first, Causing the hammer to descend each time a peg is driven a short distance below the stationary rest, for the purpose of compressing the soles, as set forth, and of relieving the shoe from contact with the rest, that it may be fed forward, as described.

Second, The arrangement of the hammer, X2, and stationary rest, H, constructed and operating as described, in connection with the weighted lever, as set forth.

Third, I claim the pecu iar holder, p, for the blank, the same having several knife edges lying in the direction of the feed, operating in the manner set forth, to hold the last peg of the blank whilst it is being separated from the one preceeding it.

Fourth, And in combination with the holder, p, I claim the pawl, A2, operating upon several points of the blanks, in the manner set forth, for the purpose specified.

Fifth, I claim sawing off the pegs in the machine by a saw operating into and through the trough through which the pegs are fed.

Sixth. I claim the spring, p2, in the end of the trough operating as described, for the purpose specified.

RE-ISSUES.

TACKLE—Joel Bryant, of Brooklyn, N. Y. Dated April 7, 1857: I claim the construction and use of winches, whose bosses or drums, turned by cog wheels, operate in connection with certain sheaves, wheels or pulleys, for carrying, operating and sustaining the fall or tackle used in hoisting or lowering the sails or cargo of vessels on shipboard, substantially as described, and for the purposes set forth.

RAILROAD CAR SEAT—J. B. Creighton, of Tiffin, Ohio. Dated May 18, 1858 : I claim the employment of the movable backs of car seats, when used for the purpose of filling up the spaces between the seats, so that a bed may be formed, and this I claim whether accomplished in the manner shown or in any other manner substantially the same, whereby the same result is accomplished.

Second, The described method of forming and concealing, when not in use, in the spaces between the windows, an upper tier of beds, the same in arrangement with the device constituting the subject of the first claim.

TREATING SULPHURETS—Alfred Monnier, of Camden, N. J. Dated August 11th, 1857; re-issued October 6th, 1857 : I claim the process of treating native metallic sulphurets or arsenical sulphurets, in connection with the substances above described, in order to expel all or part of the sulphur and arsenic, for the purpose of obtaining therefrom sulphuric acid, and the metals as sulphates or oxyds.

DESIGN.

STOVES—G. Smith and H. Brown (assignor to North, Chase & North), of Philadelphia, Pa.

Destroying Grain Insects.

Agricultural science is perhaps the most important of all others, because we are dependent upon its results for the very stamina of life, and no subject in relation to it is of more general interest than the one which forms the topic of these remarks. The labors of the husbandman are frequently rendered abortive by the ravages of tiny insects, which devour his grain in the fields, destroy the fruit of his toil, and blast his hopes of an abundant harvest. The two most destructive of these insects are the Hessian fly, and the wheat-midge or red weevil. The ravages of the latter have been very destructive in some sections of our country during the present year. The attacks of both are confined to grain in the fields. The means which should be employed by farmers to prevent or mitigate their depredations are described by the distinguished State entomologist of New York, Dr. A. Fitch, also by Professor Hind, of Toronto, C. W., in his prize essay of 1857.

There is another wheat insect which is oftentimes very destructive to grain in heaps, namely, the true weevil (*calandra granaria*), and as the crops are now being "gathered into the garner," our remarks will be chiefly confined to it.

This weevil is a sort of small beetle, brown in color, having a slender body, and is about one-eighth of an inch long. The female lays her eggs in the wheat in the granary, and a single pair will produce six thousand descendants in one year. The young burrow in the kernels of the grain, consume the contents, and leave only the shells. So secretly are their operations conducted, that it is impossible to detect them by the simple inspection of the wheat. On throwing a handful of the grain into a bucket of water, those attacked with the insect will float, while the sound grains will sink, and in this manner their presence will be discovered. After a female weevil has deposited an egg in a grain, she closes the puncture with a glutinous substance of the same color as the husk, hence the difficulty of detecting the presence of this depredator when in its *larvæ* state. As one of these insects can be the means of destroying six thousand grains in a storehouse in a season, some conception will be formed of its means of destruction.

On the approach of very cold weather, developed weevils retire from the wheat, and seek shelter in crevices where they remain in a torpid state. They are not so destructive in the cold as in the warmer sections of our country, where certain methods for their destruction are more urgent and necessary. They avoid light, hence. if the wheat is kept in well-lighted granaries and frequently turned over, much will be done towards checking their operations. Authors, however, who have devoted much attention to their habits, have asserted that kiln-drying the wheat is the only effectual means of destroying them. It has also been recently recommended that wheat for storing up should be submitted to the action of a smut machine, to receive a thorough scouring, in order to rub off the glue with which the female conceals the punctures made for her eggs. The admission of air into these small holes, it is stated, destroys the germinating powers of the eggs. It seems reasonable to us that by submitting wheat to a scouring process, then heating it in a kiln up to a temperature of about 120° or 130° Fah., it would be completely protected from the destructive effects of this insect in granaries.

A correspondent of the *American Farmers' Magazine* asserts that the weevil, midge, Hessian fly and rust may be exterminated from wheat by preparing it for sowing, as follows : Wash the wheat thoroughly in several waters in a tub, stirring it well until the water runs off clear. After this take two quarts of caustic lime to every bushel of grain, and mix it well with the wet wheat in the tub. The amount of water in the tub should just cover the grain, which must be left to soak for twelve hours. This lime lye kills all the seeds of the insects, and the wheat is then rendered fit for sowing by turning it over among dry wood ashes on the barn floor, and using a pound of the flour of sulphur to each bushel. It is stated that the sulphur protects the grain from the attacks of vermin, while the alkali dissolves the insect ova in the seed. Wheat thus prepared has yielded large crops in New England. We have seen this grain prepared for sowing by various modes, such as salt brine, lime and ashes, but we like the above method better than any hitherto known to us. Farmers residing in sections subject to the attacks of the Hessian fly, who do not sow fall wheat until October, should give this method of preparing it a trial. It cannot injure the grain, and we believe it will be the means of greatly benefiting it.

Preservation of Fruits.

As at this season of the year we have frequent inquiries respecting the best manner of preserving vegetables and fruit, we will present something which, we think, will be of benefit to many of our readers. A common way of preserving green corn to make succotash during winter is to boil it slightly in the ear, then remove the kernels from the cobs with a knife, dry them by a slow heat, and pack in tight cans. The same practice has been pursued with Lima beans, &c. A friend informs us that green corn, peas, Lima beans, tomatoes and various other vegetables, can be preserved without the use of tight cans and in a superior manner by drying them slowly at a low heat in the shade, until all their moisture has been evaporated, after which they are placed in stone ware or glass jars, and put away in a dry pantry. The best method of carrying out the operation is to place such vegetables in shallow earthenware plates, and arrange them around a stove until they (the vegetables) are thoroughly dried. They should be steeped for an hour in warm water before they are cooked. Most of the vegetables employed in cookery may be thus preserved, and retain all their original flavor.

Peaches, plums and such like fruit may be preserved in good condition as follows :—The fruit (which must be perfectly sound) is placed in air tight "self-regulating cans," then boiling hot sirup made in the proportions of one pound of white sugar to one pint of water is poured in up to the top covering all the fruit. For a few seconds air globules will rise to the surface ; when these cease ascending, the covers are put on the cans, which are then put away in a cool, airy place. Fruit or vegetables, preserved by sirups, and put up in tin vessels, do not have such a good flavor as those which are put up in stoneware vessels ; at least this is our experience.

At a late meeting of the Cincinnati Horticultural Society, this subject formed an interesting feature in the proceedings. One member stated that he had found it beneficial to gather his fruit in the morning while it was cool, and to keep it in an airy place. Pears should be gathered before they were fully ripe, and allowed to mature after picking, in a cool, clean cellar, in such a position as not to press upon one another. Another member stated that he had tried two methods of preserving pears; one was by packing them with oats in barrels ; the other by wrapping each in a piece of dry paper, and placing them in boxes in the same manner that oranges are packed for shipping. This was found to be far the best system. Another member—Mr. Buchanan—stated that he had the Virginia greening apple perfectly sound at that time (August). It was of last year's growth, and was put away in a tin-box in a cool, dark cellar. It was generally conceded that fruit kept best in a cool, dark situation. Moisture, light, and heat are active agents to cause and promote vegetable decomposition; fruits for preservation should therefore be secluded from such influences.

A correspondent (C. Campbell) of the *American Agriculturist* describes the following method, which has been successfully pursued by him for preserving grapes. The clusters —all sound and fully ripe—are carefully placed in open shallow boxes, about six inches deep, with a sheet of dry paper between each layer. They are then set in a dry, airy place, and thus kept for ten days, during which period they sweat, and the moisture passes off. The lids are now put on tight, and the boxes set in a dry, cool place, where the grapes will not freeze. Grapes thus treated and packed will keep fresh all winter. It is asserted to be a superior mode of preserving to that of packing them in dry bran or between layers of cotton wadding.

Currant Wine.

In answer to the request of a correspondent, we give the following recipe. Bruise eight gallons of red currants with one quart of raspberries. Press out the juice, and to the residuum after pressure, add eleven gallons of cold water. Add two pounds of beet root sliced as thin as possible, to give color, and let them infuse, with frequent stirring, for twelve hours; then press out the liquor as before, and add it to the juice. Next dissolve twenty pounds of raw sugar in the mixed liquor, and three ounces of red tartar in powder. In some hours the fermentation will commence; when this is complete, add one gallon of brandy, let it stand for one week and then rack off and let stand two months. It may now finally be racked off, and placed in a cool cellar where it will keep for years. The cider white wine is a pleasant beverage; here is the recipe. Mix sixteen gallons of apple juice, sixteen pounds of honey, four ounces of white tartar, enclose in a bag one ounce each of cinnamon, cloves and mace, and suspend them in the wine while fermenting. When this fermentation is complete, add one gallon of rum.

Poison of the Common Toad.

It is an ancient and common opinion that toads and salamanders possess a subtle venom ; this, however, has been generally deemed fabulous by those engaged in scientific pursuits. MM. Gratiolet and Cloes, in a report to the French Academy, show that there is in reality some foundation for the common belief, and that toads and salamanders do secrete a deadly poison. These gentlemen innoculated small animals with the milky fluid contained in the dorsal and parotid pustules of these animals, and found it productive of fatal effects in a short space of time. A turtle-dove slightly wounded in the wing and inoculated with the liquid secreted by the salamander, died in terrible convulsions in eight minutes. Five small birds inoculated with the lactescent humor of the common toad, died in five or six seconds, but without convulsions. The liquid of the pustule of the toad, even after being dried, kills birds, though not with the same rapidity as when fresh.

ACKNOWLEDGMENT.—We have to thank Commander Thomas J. Page, U. S. N., for a beautifully colored map of the basin of La Plata, being the result of his recent surveys.

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New Inventions.

Michener's Valve for Steam Engines.

This simple and improved valve is of the circular or disciform kind, and is operated with a reciprocating circular motion. Its novelty consists in the arrangement of its ports and passages for the induction and eduction of the steam, whereby a large amount of opening is obtained by a small amount of motion, and it is relieved to a great extent from the pressure of the steam on its back side.

In our illustrations Fig. 1 is a vertical section through the center of the improved valve, steam chest, and a portion of the steam cylinder, and Fig. 2 is a horizontal section of the valve and steam chest.

Fig. 1

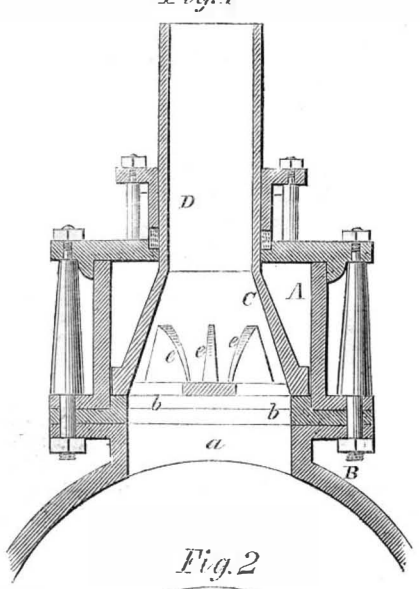
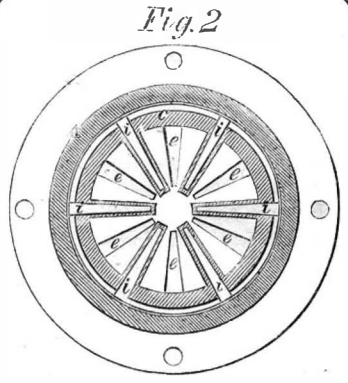


Fig. 2

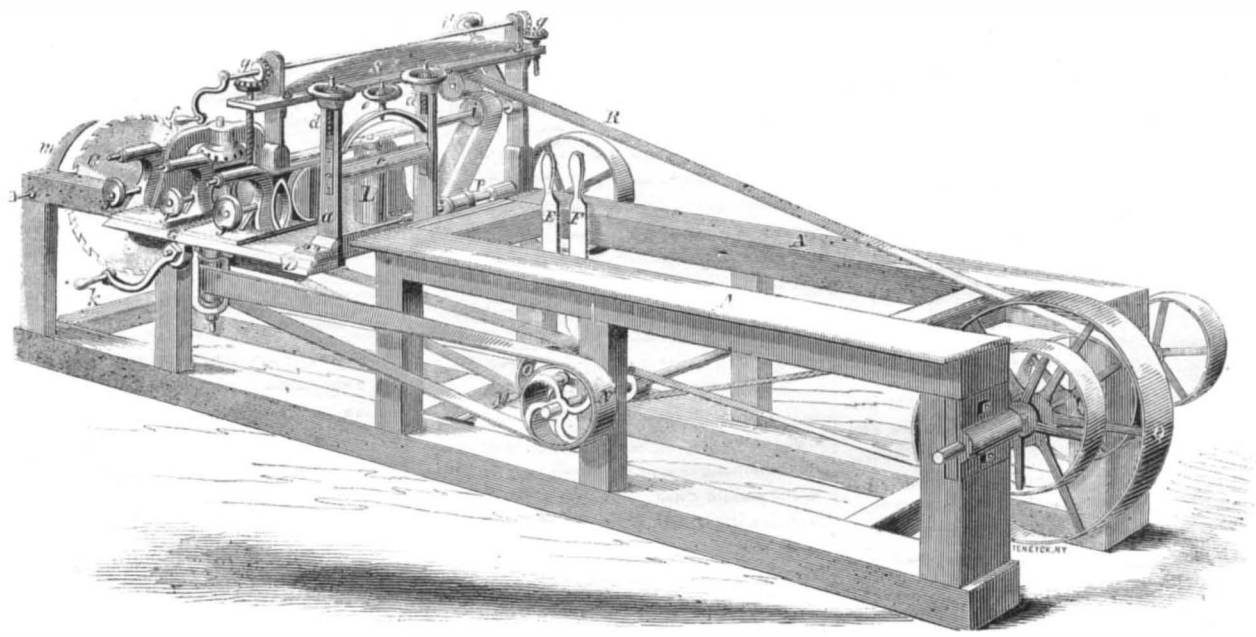


A represents the valve chest, one of which is placed on either end of the cylinder, B, so as to provide each of the main cylinder ports with a separate valve. *a* is the main cylinder port, with which the valve chest, A, communicates through a series of equi-distant radially arranged ports, *b*, in the flat circular valve seat. C is the hollow valve having a circular face, and provided with a large hollow stem, D, which also serves as the exhaust pipe, said stem being perpendicular to its face, and working through a stuffing box in the chest, A. This valve contains a series of equi-distant radially arranged ports *i*, corresponding in number and width with the ports, *b*, said ports being in form of channels in the exterior of the valve, and communicating with the interior of the steam chest, A, and constituting the induction ports. Besides these, the valve contains a second series of ports, *e*, midway between spaces, *i*, and corresponding in number and size with the openings, *b*, said ports communicating with the hollow interior of the valve, and with the hollow stem, D, and constituting the eduction ports. The hollow stem, D, connects by a working joint with one of two branches of the main exhaust pipe of the engine.

The operation of the valves is as follows:—They receive motion through any suitable mechanical contrivance applied to their stems, the distance of said motion being inversely as the number of the ports, the valve shown having twelve ports, requiring to make one-twelfth part of a revolution, and one with six ports, requiring a sixth part, and so on. The motion takes place quickly, just before the piston arrives at the end of its stroke, and the valve at that end of the cylinder which the piston is approaching, moves to such a position that the ports, *e*, which have been in communication with *b*, move to a position opposite to the middle of the spaces between *b*, and the ports, *i*, to a position opposite to the ports, *b*, thereby opening communication from the valve chest to the cylinder, and at the same time as the valve at the one end of the cylinder makes this movement, that at the opposite end of the cylinder makes a movement precisely the reverse, and changes its position from that last described to that previously described, thus permitting the exhaust of the steam from that end of the cylinder through the ports, *b* and *e*, and through the hollow stem, D, of the valve. When the piston arrives near the other end of the stroke each valve has the same movement its fellow had at the end of the previons stroke, that is to say, moves back to the position it previously occupied. In this manner the movement continues, the valves being stationary the greater portion of the stroke, and moving in opposite directions alternately, as the piston arrives at the end of its stroke, and through the employment of several ports in the valve and seat, a very small amount of movement is necessary to produce a given aggregate amount of openings in the ports, and by making the valve with a hollow stem of large diameter, a large portion of its surface is relieved from the pressure of the steam:

This improved valve was patented the 12th of January, 1858, and any further information desired may be obtained by addressing the inventor, W. R. Michener, of Marlboro', Stark co., Ohio.

TITUS & SHARP'S SAWING MACHINE.

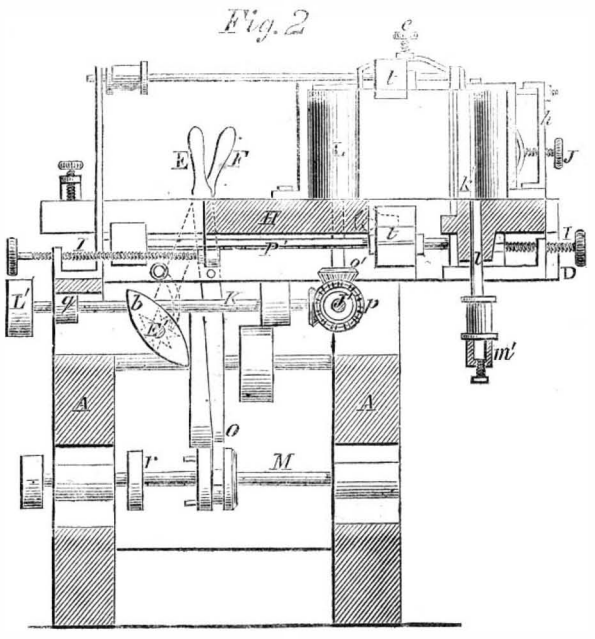


This machine is intended for re-sawing boards of any thickness into "siding," and planing, jointing and sawing the "siding" or lapboards at one operation.

In our engravings, Fig. 1 is a perspective view of the machine, and Fig. 2 a transverse vertical section, both combined fully illustrating the invention.

The whole of the parts are enclosed in a frame, A, the saw, C, being at one end with its guard, *m*. D is a frame, which is placed transversely on the frame, A, and attached to it by pivots, on which it can oscillate freely, and underneath D a shaft, E′, is placed, having two cams, *b*, upon it, these cams causing the table to assume any desired bevel upon being operated by the handle, F, where the frame can be secured by a pawl and ratchet. On the frame, D, two sliding plates, G H, are placed, and they can be adjusted by two screw rods, I (as shown in Fig. 2), or by a crank handle and screw, *k* (as seen in Fig. 1). On the plate, G, there are placed three vertical rollers, having bearings in suitable frames

Fig. 2



supported by uprights, *h*, and each is pressed against the stuff by a spring and screw and hand wheel, J. On the plate, G, is a vertical cutter head, *k′*, provided with the necessary cutters, and forming a rotary planer. The lower end of the shaft of this planer, *l*, is stepped in a stirrup, *m′*, which is attached to the underside of G. On the plate, H, are a series of rollers, L, fitted in suitable bearings, the lower end of the axes pass through the plate, H, and terminate in a bevel wheel, *o′*; these gear into corresponding wheels, *p*, placed on a shaft, J′, and rotated from the band wheel, L′, the shaft, K, of which is supported in bearings, *q*. L′ is driven by the belt, M (Fig. 1), from O, that derives its motion from one of the band wheels, Q, M (Fig. 2), being the band wheel shaft, the wheel, *r*, on which is geared by the lever and sliding wheel, O.

P P′ are shafts placed one above the other, and having on them the cutters, *t*, which are rotated by the belt, R, passing partly around rollers or belt wheels, *i*, upon their shafts. N is a band, which rotates the vertical cutter or cutters (for there may be two) to smoothen each side as desired. The handle, *f*, and bevel wheels, *g*, in the frame, S, regulate the distance between the horizontal cutters, and the hand wheels, *d e*, in the frame, *a*, with their roller, *c*, all tend to keep the stuff rigid and straight while being operated. The hand wheel, *i′*, tightens the band, R, when necessary.

The operation is very simple. The stuff is fed to the saw, cut the desired thickness, then the cutters, *t*, as the rollers move it between them, joint its top and bottom edges, while the vertical planer, *k′*, smoothens its side, thus turning out a clapboard ready for use by one operation.

It is a very valuable and perfect machine, and is the invention of E. H. Titus & John Sharp, of Phillipsburgh, Pa., who patented it June 29th, 1858, and who may be addressed for any further information.

Sleeping Car Seat.

A good arrangement of sleeping car seat was patented a few weeks ago by Mr. J. N. Forrester, of Fairfax Court House, Virginia. In this car seat the bottom and back are adjustable to an inclined position, and an auxilliary back and bottom, which are adjustable, and used in connection with the same, said auxilliary back and bottom being arranged below the main bottom and back of the seat. By this arrangement, each of the main bottoms and backs answer for day use, and at night can be extended on an inclined plane, and thus serve in connection with the auxilliary bottoms and back as comfortable sleeping couches. On the fronts and backs of the seat ratchet teeth and spring pawls are provided so that the backs and bottoms can be adjusted very speedily and retained in whatever position they may be adjusted.

Car Couplings.

Mr. J. W. Corey, of Crawfordsville, Ind., has invented a car coupling which provides for the automatic disconnecting or uncoupling of the cars in the event of the train running off the track. We regard this as a very simple and perfect arrangement, and by its use many of the sad accidents at draw-bridges, &c., will be prevented, as the preceding car cannot draw the others into the river after it. It was patented last week.

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Scientific American.

NEW YORK, OCTOBER 2, 1858.

Steam Propulsion—Crank and Paddle Wheel.

The last number of *Hunt's Merchants' Magazine* contains an article on the above subject, by H. Boynton, of this city. It is written with much ability, and its tenor is to show that there is an immense loss of power by the oblique actions of the crank and the paddle wheel in steamships. This loss is stated to be about 21 per cent in the crank, and over 55 per cent in the paddle wheel, thus making a total loss of 76 per cent of the steam power exerted on the piston. It is asserted that nearly all this waste of power can be saved by a new system, called "the reciprocating railway oar-truck, parallel propulsion." What this system is remains yet to be shown, as it is not clearly described. Wrong notions are entertained by many persons in reference to the loss of power by the use of the crank, and we consider this a good opportunity of expressing our views upon this subject for the benefit of the general reader.

Our acquaintance with the crank, and an investigation of its properties, led us long since to the conclusion that it occasions no loss of power by oblique action, and that it is the most beautiful compensating device ever devised for converting reciprocating into rotary motion. Owing to a misapprehension of its action, innumerable substitutes have been devised for it, but they have all yielded to its superiority, even the "sun and planet" motion of the unequaled Watt.

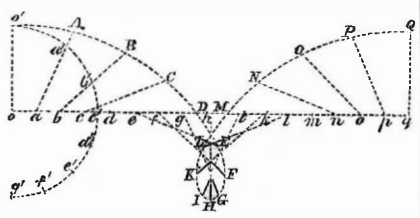
The crank is simply a lever or crooked arm, a well-known device, used from the most ancient times to convert rotary into reciprocating rectilinear motion, and *vice versa*. Connected with the piston rod of a steam engine, and the rotary paddle shaft of a steamer (either united with a walking beam or not), the crank and paddle wheel make a revolution while the piston makes one movement forward and another backward in the cylinder. The crank is in length the radius of the circle it describes, or one-half the length of a single stroke of the engine. It therefore has a definite relative velocity to that of the piston, which is as 100 to 63. For example, while the piston moves through a space of 63 inches, the crank pin moves over a space of 100 inches. It is oblique in its action to be sure, in relation to the direction of the piston, but this involves no loss of power, because its greater velocity makes up the difference. Thus allowing the piston of an engine to have an area of 100 square inches, a pressure of 100 pounds on the square inch, and a double stroke of 63 inches, the power will be 10,000 pounds moved through a space of five feet three inches. If the oblique action of the crank is measured, while the piston makes a double stroke, the pressure on the crank pin will only be 63 pounds to the square inch to each interval of space passed over—37 pounds less than the pressure on the piston. This consideration has led many persons to believe that there is thus a great loss of power in the use of the crank. But as 63 pounds pressure on a crank pin moving over a space of 100 inches is exactly equal to 100 pounds on the piston moving 63 inches, there can be no loss of power in such a case. The relative velocity of the piston to that of the crank is as the spaces passed through, namely, 2 R to 3·1415 (very nearly), or 63 to 100.

Many persons have entertained the notion that a machine could be made to generate its own power; in other words, a "perpetual motion." The idea that a machine can destroy its power independent of the friction of its rubbing surfaces, by oblique action, is but the converse of a perpetual motion; the one is just as correct as the other. Power may be transferred but not annihilated in a machine. There are rectilinear and there are crank Cornish pumping engines, and the latter are just as efficient as the former, thus showing that the crank does not destroy the power. A fair test of some of these engines has developed the fact that they gave out to within 10 per cent of the steam power applied, and when this amount of friction is allowed for the whole of the engine, it is impossible that more than two or three per cent was taken up by the crank.

The crank has two dead points in the revolution. This has been held to be a great objection to it; but at these points it does not waste power, because the piston is then at the end of its stroke, and therefore not consuming steam. As the movement of a piston back and forth in a cylinder requires it to be arrested and again set in motion, at the end and beginning of every stroke, this would be liable to produce a series of concussions, and great irregularity of motion were it not for the crank. Its greater velocity converts the irregular motion of the steam on the piston into one of great uniformity; it sweeps smoothly and gracefully past the dead points, especially when aided by a fly wheel, or its substitute, and involves no loss of power by its oblique action. From its nature and mode of action it performs the office of a conveyor and regulator of power.

Mr. Boynton is right in stating that there is a great loss by slip in paddle wheels, but in smooth water, with a uniform submerged section of vessel, fifteen, not "fifty-five," is allowed to be the general slip of steamboats. Thus showing that it is not the oblique action of the paddle wheel, which may be the cause of such a great amount of slip in steamships, as he asserts. Ocean steamers do not afford a true test of the real amount of slip. Owing to head winds, rough seas and heavy cargos the slip varies from 15 to 75 per cent. In severe head winds, even when the engines and paddle wheels are kept in continued motion, it is sometimes impossible for steamers to make any forward progress, the whole of the paddle wheel action is then converted into slip, but this is not owing to their oblique action. Scott Russell, in his work on steam navigation, presents the accompaning illustration of the action of the paddle wheel while a vessel is in motion, to show that there is not much if any loss of power by *concussion* and *lift* as the paddles enter and leave the water.

The phenomena of a paddle wheel revolving on a steamboat when the vessel is in motion differs essentially from that exhibited when the wheel revolves and the vessel is standing still, as is rendered clear by this diagram. Commencing at the point, o', with the wheel turning on a stationary shaft, the paddle would come successively into the positions, a' b' c' d' e' f' g', but by the shaft advancing forward (as the boat is moved) into the positions, a b c d, &c., the paddle describes a path in reference to the water which is the result of both motions, and the successive positions it occupies are a A, b B, c C, &c. The paddle describes trachoidal curves; it is inserted into the water in an angular position closely resembling that of an oar; then it acts horizontally for a short period, after which it is withdrawn from the water edgeways, in an easy and elegant manner, which a dexterous rower might try to equal, but which he could hardly excel.



Innumerable devices have been invented to remedy the supposed evils of existing paddle wheels, but none of them have succeeded. Mr. Boynton may have invented a new and useful improvement in steam propulsion, but he has over-estimated the loss of power by the crank and paddle wheel. The screw propeller, taking all things into consideration, appears to be the prince of propelling devices yet brought forward, and it remains to be demonstrated whether it or the paddle wheel will be superseded by "the reciprocating railway oar-truck, parallel propulsion."

The New York Evening Post and the Scientific American.

The *New York Evening Post* of the 24th ult. says:—

"The logic of the SCIENTIFIC AMERICAN is not always as good as its science, and its attention to the theories of its contemporaries not always as respectful as to the patent theories of its clients. With no disposition to disparage the general ability or fairness of the SCIENTIFIC AMERICAN, we desire to remind it of the following instance of palpable misrepresentation, which was doubtless unintentional:

EVENING POST.	SCIENTIFIC AMERICAN.
'The difficulty of sending messages rap- idly depends on cir- cumstances connected with the *cable itself, and not on the instruments*; which we invite electricians' attention. 'Let it be borne in mind that *we are now urging a well known law and, therefore, familiar, we presume, to all the electricians engaged on the cable.*'	'The New York *Evening Post*, of the 6th inst., assumes that the difficulty with the Ocean Telegraph is not due to the instruments, and this is the point to but to the cable itself. *This is not a new idea, although it is put forth as such.*'"

We have no desire to misrepresent our cotemporary, the *Evening Post*, and we are somewhat surprised that a journal of its acknowledged ability and probity should have resorted to mere quibbles in order to blunt the force of our reasoning upon the "Science of Ocean Telegraphing." Our "logic," it says, "is not always as good as our science." Well, let us see. Looking squarely at the above parallel passages, it would seem perfectly clear that we had misrepresented the *Post*; but instead of this being the fact, we think that we can show that the *Post* has not only misrepresented itself, but has placed us in a false position before its intelligent readers. It has misquoted its own language in a most important particular, by omitting a whole sentence immediately after the words, "electricians' attention." The writer continues as follows: "No increase of power will influence the velocity, for the latter is determined by the former." Now, in our opinion, *this* omitted sentence contains the law which the writer declares to be so well known, and the whole subsequent part of the long article confirms our judgment. It seems to us preposterous to call "circumstances connected with the cable" a well-known law. If we understand language, these "circumstances" could not properly receive such an appellation. How can the editor of the *Post* argue out that a circumstance is a well-known law? We have the authority of Doctor Johnson that it is "an adjunct of a fact," while a law is a fact itself—the cause or principle from which circumstances proceed. If our misrepresentation is so "palpable," why did the *Post* omit the quotation upon which our remarks are founded?

Possibly we may have mistaken the writer's position in reference to the novelty of the cable idea. He invited the electricians' attention to it, and this fact impressed us that he thought it was new. If this is the *law* he supposed was so familiar to all electricians engaged on the cable, it is almost ridiculous to suppose that they needed to have their attention invited to it.

Fair of the American Institute.

The Thirtieth Annual Fair of the American Institute was opened to the public on the evening of the 21st ult. Judge Meigs made the usual inaugural address, and gave a very clear and succinct history of the annual exhibitions of this institution, setting forth their objects, namely, the encouragement and improvement of American manufactures and productive industry. The opening of the Fair had been postponed for a week, to allow exhibitors further time to bring forward their articles, take up their positions, and permit of a better general arrangement at the opening than had been usual on like occasions previously. We regret to state that the exhibitors have been rather dilatory in coming forward, but at the time of our going to press, great activity is beginning to be manifested, and a very good Fair is in prospect.

The show of agricultural implements is the largest and best that has ever taken place, and so is that of the various fruits. It will be an instructive and entertaining Fair to our farming population. We intend to give this department—agricultural machinery—particular attention, and notice all improvements deserving special attention.

The show of tools, lathes, screw machines, &c., promises to be excellent. There are two lines of shafting for driving machinery, and every facility is afforded for a good display of mechanism. We will not take up space at present in generalizations, as in future numbers we will enter into particulars. The exhibition will continue until the end of October.

The Atlantic Telegraph.

The Ocean Telegraph is a marine hobgoblin. After condescending to pass compliments between "Her Majesty the Queen" and "His Excellency President Buchanan" upon the success of that event which cost our citizens so much powder and puffing, he grew sulkily silent, and for three whole weeks refused to do a single bit of the business for which he was engaged. A story was set on foot by that old electric eel, Professor Whitehouse, to the effect that this water wizard had become cracked on one of his Irish adventures, and that his keepers had refused to attend to his case, when lo! out he pops from his submarine cave at Newfoundland on the 22d ult., and declared in the most indignant terms that he was neither cracked nor constipated, but had been taking a long and necessarily refreshing snooze, after the severe labor of carrying such weighty responsibilities for *two* whole days as the messages (consisting of 158 words) of the two greatest dignitaries of the Old and New Worlds. Like Richard, he was "himself again," wide awake, and would be ready, in the very short period of other *three* weeks, to do the entire "lightning express" business between John Bull and his promising descendant, Brother Jonathan.

The matter being thus fairly understood, the old fellow took another notion into his head, and on the very next day (the 23d) he declared that it was not him who had spoken on the previous day, but some other fellow for him. He stated he had not waked up yet, and could not tell when he would—the lazy old porpoise. We hope "King Cyrus" will soon give him another *field* day, and put him through his regimental facings. It is our opinion that he is too slow in his motions to do business for the descendants of the Flying Dutchman. We recommend that he be "ringed down" according to the enlightened proposition of our worthy cotemporary the *Evening Post*.

The Period of Life subject to Insanity.

The London *Lancet* says that to determine the period of life which furnishes the greatest number of insane persons, it is sufficient to bring together the records, made up under different circumstances. One of these, made at the Bicetre, France, where poor men only are received; another at the Salpetriere, a hospital for poor women; the third, an establishment devoted to the wealthy, have been examined, and it appears that the age which furnishes the greatest number of insane is, for men, that from thirty to forty years, while for women it is that from fifty to sixty years. The ages which furnish the least, for both sexes, are childhood, youth, and advanced age. Among women insanity generally appears earlier than among men, indeed, from twenty to thirty years of age. The rich are more subject to insanity, in proportion, than the poor.

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American Genius.—Launch of the General Admiral.

There are three desires implanted in the human breast, which, if sought to be gratified in a proper manner, will develop the intellect and wisdom of a people, and yield corresponding beneficial results, not only to those within the immediate sphere of their influence, but also, by example, to the whole world ; and these are the desires of power, of esteem, and of knowledge. They are distinctly perceived in all deliberations of individuals and governments, in every purpose of resolution formed in consequence of deliberation, and in every promise or contract in which man plights his faith. They cause men in dealing with all the phenomena of nature to give the superior elevation to mental over physical labor, and a regular and orderly disposition and arrangement to the various parts within the grasp of individuals, and bring out the vitality of intellect to fit means to ends. It is gratifying to every true lover of his country to perceive daily evidences of the fact that the American mind has properly comprehended its mission in these respects, and through its power and clear sightedness, has even now, at this yet undeveloped stage not only developed our own internal resources, and poured blessings upon every household in our land, but actually brought to our shores people and governments from lands thousands of miles away, to pay homage to American genius and enterprise.

Twenty-eight years since, the first locomotive engine was imported to this country from England, and now we have thousands of these iron horses of our own construction, traversing a web of railway over 24,000 miles in extent against 8,000 miles in England, and are constantly transporting them to various quarters of the globe. In ship-building we have surpassed the world, and now we have the great northern Autocrat of all the Russias, as did his illustrious predecessor of the house of Romanoff for locomotives, coming to the shipbuilders of the Great Republic, after critically examining the works of the world, and selecting one as the architect of a mammoth vessel for his Imperial Navy. The fact is significant, and no wonder is it that thousands of our citizens repaired, on the morning of the 21st ult., to the shipyard of our fellow-citizen, W. H. Webb, to witness the launching of the American-built Russian ship *General Admiral*. The New York *Herald*, in giving a notice of this memorable event, truly says that upon an occasion so full of pride and honor for America, when the eyes of thousands are resting on the finest and largest wooden vessel that ever floated on the bosom of Old Ocean, from the days when the crude ark of Noah was tossed by the tempestous billows of an inundated world, until these progressive days of human prowess and scientific achievements—the reflective mind cannot but give a brief retrospective view of the past. If the venerable poets of ancient Greece and Rome could in their days have been permitted to see such a leviathan of the deep, the creation of man, formed from the branches of the sturdy monarchs of the forest, what "thoughts that breathe and words that burn" would they not have conveyed to their parchments for the instruction of distant posterity ? If the crude crazy structures of those early times could have called forth the warm approbation in inspiriting verse of a Horace, a Virgil, and a Juvenal, what would these ancient heroes of song have said, could they have seen this huge monster of the deep ? The nineteenth century of the Christian era is as redolent of wonders as the spring rose is of odor. Witness the great triumphs of science that have followed one upon the other. On casting the glance of thought over the records of the past, we are struck with wonder and amazement. We see, as it were, in the hoary vista of a dim antiquity, the fragile ship of the Argonautæ accompanying Jason to Colchis, in his daring expedition in an attempt to recover the fabled "golden fleece." But what was the little barque of Argos to the great frigate launched yesterday ? In the "Metamorphoses" of Ovid this famed barque was held to be the first that ever sailed the sea; and now the indomitable scion of an ancient house, that claims a spiritual and temporal power over seventy millions of souls, in the face of the old prestige of Europe, comes to a vigorous nation of people scarcely a century old, to procure the construction of a wooden wall commensurate with its power and greatness.

The launch of this magnificent vessel was in keeping with all the admirable arrangements observed during its construction. At twenty minutes past eight o'clock the ways were cleared, and amid the shouts of the assembled thousands, the *General Admiral* slowly, steadily, and gracefully glided into the bosom of the East River. The unanimous and heartfelt enthusiasm of the masses upon every accessible seeing point in the neighborhood, and of the hundreds of persons on board, was a fitting ovation to the genius, enterprise and skill of the architect, and in fact, of all engaged in the completion of this marked evidence of American shipbuilding.

The keel of the *General Admiral* was laid on the 21st of September, 1857, by the Russian Minister and a number of Russian officers, with all proper ceremonies. The model is what is called the long flat floor, full bilge, sharp end, round stern, no poop or cutwater, and short forecastle deck. She is expected to attain a speed of fourteen knots under sail, and her draft of water will not exceed 25 feet. Her dimensions are:—Length on spar deck, 307 feet; breadth, 55 feet ; length over all, about 325 feet; depth to spar deck, 34 feet. She is pierced with 44 side ports and two stern ports on the lower deck, and 30 side ports and 4 large ports forward, and 4 large ports on the spar deck. Her armament will consist of 40 shell guns of large caliber on the gun deck, and 20 long guns and 2 pivot guns of largest size on her spar deck. She is built of white oak, and will be propelled by two direct horizontal engines, now building at the Novelty Works, this city, each cylinder of which will be 84 inches in diameter, and 3 feet 9 inches stroke, with a nominal power of 2,000. The propeller is 19½ feet in diameter, and is one of Griffith's patent, and can be raised out of the water at pleasure. We gave an illustration of this propeller on page 352, Vol. XII, Scientific American. It is expected that she will be finished by October next, and long after the great ship shall be floating on the ice-bound waters of the northern seas will the recollection of this launch be borne in mind by all who witnessed this step in the completion of a magnificent sample of skill, alike honorable to America and those who were immediately engaged in its design and construction.

Volcanoes and their Action.

When we recollect that this hard, rocky crust of earth on which we live only compares with the igneous fluid mass beneath, as a sheet of writing paper on an ordinary school globe, we cannot fail to be highly interested in the occasional demonstrations of its presence, called "volcanic eruptions;" and further, when we associate these eruptions with their friends, the earthquakes, and recall the myriads of our fellow beings who have perished by their scourge, a double excitement is felt at the recountal of their horrors and the inducement to study their phenomena is considerably hightened.

From the researches of Daubeny, Gemellaro, Waltershausen, Quatrefarges, and others (some recent, others antique), we condense the following information :

There are in the world no less than 559 volcanoes, 270 of which are active, and 190 of these are found in the Pacific Ocean. The average number of eruptions every year are twenty, and all these are grouped around some great central cone such as Vesuvius, Etna, Peak of Teyde in Teneriffe, Pico of the Azores, the volcano of the isle of Bourbon, Mount Erebus in south latitute 78°, Antarctic Ocean, and about 12,500 feet high; Mount Loa and Mount Kea, in Hawaii, both about 14,000 feet in hight.

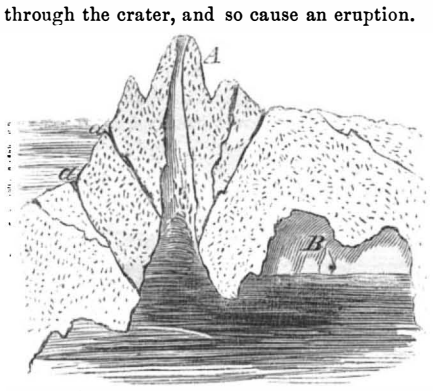
The whole of the Canary Isles rest on one volcanic hearth, over which each one of them has been raised by submarine eruptions to their present level. A great number of fiery mountains lie in a line one after another, and they are frequently grouped in double rows or chains; these have been called "chain volcanoes." Those in Iceland are arranged in this way. The Lipari Isles appear to be the loftiest crater-crests, among which Stromboli is ever active. A great number of volcanoes are upon the ridge of the Cordilleras, in South America, and twelve among them may be called chains. In Guatemala and Nicaragua burning mountains are found, and one in the latter place is only 500 feet high. In January, 1835, there was an eruption of this, the ashes of which were carried by the winds to Jamaica, and a vessel was covered with floating pumice, 800 miles at sea. The Mexican volcanoes are well known, and include Popocatapetl, from which is ever issuing fire, smoke and ashes, at a hight of 17,000 feet. In Java, Sumatra, &c., are many smaller ones, although some attain the elevation of 12,000 feet.

Every European traveler has explored Vesuvius ; and from Murray downwards there never was a handbook of travel published without a full account of somebody's ascension and descent; but of Etna we know less, and therefore to it we shall principally direct the reader's attention. Its hight is 10,830 feet, and the base is about thirty-five miles in diameter, and from the sea it has rather a picturesque appearance. As the wanderer ascends its sides, he first passes through fertile fields, where the salubrity of the climate and clearness of the atmosphere have drawn together a population of about 300 000 persons; then on through a forest where pines and firs flourish in rich luxuriance, to the "desert region," where a curious contest is often going on between the hot lava and the snow that nearly all the year comes down thus far. Many blow holes, through which issues sulphureous smoke, and small cones, occasionally ejecting small stones, dot this region, and give a fantastic wildness to the scene. Passing up still higher, the "valley of oxen" is reached. This is a vast ampitheater five miles in diameter, and surrounded on three sides by precipices 2,000 feet or more high. Water is scarce here, as every rain-drop that falls, and all the melting snow or ice, is rapidly absorbed by the porous pumice stone, or evaporated into steam by the hot lava. We have not space to enumerate the many eruptions of this mountain, the earliest on record being B. C. 480, 427 and 396, from which time to the present it has always been smoking, and many times has sent forth its devastating showers and liquid lava, overwhelming the surrounding country for many miles.

The steepness of the principal cones of burning mountains prevents the torrents of lava and showers of ashes lodging on their sides, except in the crevices and fissures, and in consequence the mountains themselves are not much elevated, but the surrounding plains that flank an active volcano quickly rise by the accumulation of lava on their surface. This phenomena is proved by the fact that round a monument at a great elevation on Etna, and which is two thousand years old, in all that period up to 1807, only nine feet one inch of lava had accumulated, while on one occasion the fluid mass rose to a hight of sixty feet above the ramparts of Catania—a town twenty-five miles off—and then toppling over, fell in a burning cascade upon the town beneath.

Passing now from the facts to the speculations they have induced among geologists, we will present those which appear most satisfactorily to account for their origin and continuance. Without alluding to the more ancient theories of the heathen philosophers, some of whom imagined that a volcano was but the chimney of the furnace in which Vulcan and his one-eyed Cyclops forged the thunderbolts of Jupiter, we will give two theories of modern times. When we recollect the hills and dales, the high mountains, and deep oceans which cover the surface of the earth, we are naturally led to suppose that the under surface of this crust is equally rough and uneven. Sir Humphrey Davy, when he proved the existence of the metallic elements, calcium, strontium, barium, &c., suggested that in the central and fluid portion of the earth these existed in the pure metallic state, and that as the water filtered through the rocks it would be quickly decomposed by them into its elements, the hydrogen being set free, and the oxygen combining with the metals. Whether this be so or not, we are certain that from chemical action, heat, and electricity, a great quantity of gas must always be mixed up with the molten mass of elemental fusion, this, of course, being lightest, will always ascend and escape if it can, and if not able to have free egress, it will press with such force as to produce earthquakes, and, making vents, form volcanoes.

We have made an imaginary section through a volcano. A is the principal cone, surrounded by the dyke and wall, and the sea is washing its base on the one hand, while on the other extends the fertile plain and grassy slope. B is a cavity in which the gases can accumulate, and when they have sufficient force it is evident that they would eject the molten matter by their own expansive power through the crater, and so cause an eruption.



a a are submarine vents, and will show how eruptions may take place under the sea. It has been calculated that the number of atmospheres which the gases, vapors, &c., must be condensed to eject lava from Etna, is 882, while the force required to cause an eruption of Cotopaxi, in Quito, 18,869 feet high, would be 1,492 atmospheres, or 24,380 pounds to the square inch, and that some such condensation as this does go on is also evidenced by the presence of sulphureous or boracic blow holes on the flanks of all volcanoes.

The other theory is entirely mathematical, and may be called the dynamic. It assumes the premises that the fluid in the interior of the earth obeys the same laws as fluids on the surface, and that it will be attracted by the other masses of matter in space, which, aided by the rotary motion of the earth, produces a wave-motion in the mass, and these being granted, the conclusion is that volcanic eruptions and earthquakes are but *high fire*, not *high water*, in the fused material. Which of these is correct we cannot say. Much more research is required before we can positively affirm the cause of these phenomena; but in the meantime, theories serve a good end, by stimulating inquiry and encouraging investigation.

How to Stop Blood.—Take the fine dust of tea or the scrapings of the inside of tanned leather, and bind it close upon the wound, and blood will soon cease to flow. These articles are at all times accessible, and easy to be obtained. After the blood has ceased to flow, laudanum may be advantageously applied to the wound. Due regard to these instructions will save agitation of mind, and running for the surgeon, who would probably make no better prescription if present.

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*** Persons who write to us, expecting replies through this column, and those who may desire to make contributions to it of brief interesting facts, must always observe the strict rule, viz., to furnish their names, otherwise we cannot place confidence in their communications.

Scrutator—Your communication upon the "Science of Ocean Telegraphing" will receive respectful attention when you furnish us your proper address. Anonymous communications are rejected by the press generally, and this fact seems to have escaped your notice.

J. E., of Va.—You have confounded two distinguished persons. Herschel is an Englishman, an astronomer, and still lives, at the age of 68 years. Humboldt is a German, and is now 89 years of age. It is said he has predicted his own death to take place in 1859. Herschel has never visited this country, but Humboldt has visited the greater portion of the world. He is regarded as one of the most remarkable men of this or any other age.

Wm. Davies, of Brenham, Texas, wishes to correspond with a manufacturer of cast iron hubs and axles for heavy wagoas; also with a bolt manufacturer.

A. F. H., of Ill.—There is no recent published work on millwrighting.

W. L. P., of N. Y.—Communications sent to us without the writer's name cannot be intelligibly filed away, therefore they are not saved. Please to send a sketch and description of your anti-collision bridge, and we will examine it.

E. M., of Va.—The mineral you send us is marl. It has no value except as a polishing powder.

F, W. F., of Ga.—India-rubber is soluble in naptha and spirits of turpentine, and it can also be softened by heat. It is rendered soft for being molded in dies, by kneading it between heated iron rolls. This is the cheapest method, and the one pursued in india-rubber manufactories.

The Papal City is to be lighted with gas; the progress of the age having caused Pio Nono to cry "What ho! there, lights."

——, of Brooklyn.—The delicate experiment you allude to as having been performed by Mitchell, does not prove in any way that light has weight, but only that it may be capable of producing motion; besides, the force of light coming from the sun has associated with it, heat, chemical action, electricity, &c., and any of these may have produced the motion. In our paragraph on the "Wonders of Light," we did not say that light had no "momentum or force," but simply that it had no weight, and weight and force are two different things.

The largest slip dock that has yet been made, is in course of construction at Glasgow. It is capable of taking up ships of war and steamships of 3,000 tuns register, and is to be erected at Alexandria for the Pasha of Egypt.

H. H., of La.—We do not know where you can purchase a lathe for eccentric turning, such as axe handles, carriage spokes, &c. Blanchards lathe is principally used for this purpose, but we do not know that it is sold to others to use in the business.

G. W., of Mass.—We have a good opinion of Messrs. Cridge, Wadsworth & Co.'s oscillating engine.

L. R., of Md.—Your observations upon the potato rot will receive attention in due time.

Comets.—It is a fact of unusual occurrence that there are now visible in the heavens three comets, the brightest of which, Donati's, can be distinctly seen with the naked eye about ten degrees above the horizon, in the northwest, about 7½ P. M. It shows a tail of two degrees in length, and is rapidly increasing in brightness, and rising higher above the horizon at that hour.

L. G. E., of Ala.—The best known lubricating material for machinery is pure sperm oil.

The city of London, which forms but a small portion of the metropolitan district, raises a tax on coal which amounts to $1,550,000 per annum.

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, September 25, 1858:—

T. R., of N. Y., $25; C. B. M., of Ill., $25; H. S., of N. Y., $25; W. D., of Texas, $7: W. & B., of Iowa, $30; G. D., of Ill., $25; A. E. T., of N. Y, $30: F. D., of Ohio, $30; E. E., of N. Y., $20; McC. & D., of L. I., $30; E. L. E., of Conn., $55; J. M. B., of Me., $30; E. M. J., of Conn., $30; A. S., of N. Y., $10: J. S., of Iowa, $50; J. C. T., of N. Y., $40; J. C. K., of Ark., $30; J. S. M., of Mich., $30; C. J. C. P., of Iowa, $50; A. B., of Vt., $25; F. M., of Ill., $65; H. H., of N. Y., $250; H. M., of Pa., $30; H. E., of N. Y., $20; J. R. H., of N. Y., $20; J. J. C., of Mo., $15; W. H. C., of Mass., $30; P. & H., of N. Y., $25; S. E., of Pa., $30; D. E. B., of Mich., $30; W. H. Van D., of Pa., $50, K. & R., of Mass., $25; P. B., of Conn., $35; P. L., of N. Y., $20; C. K., of N. Y., $30; C. S. P., of Conn., $30; H. E., of Iowa, $27: J. H., of Mo., $55; J. W. S., of Ohio, $55; J. M., of Miss., $47; J. H. T., of R. I., $30; M. H. R., of Tenn., $25; A. S. L., of N. Y., $250.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, September 25, 1858:—

N. C. P. S., of N. Y.; A. B., of Vt.; F. M., of Ill.; P. M., of Ill.; J. S. M., of Mich.; J. M. B., of Me.; J. C. T., of N. Y.; C. J. C. P., of Iowa (two cases); C. B. M., of Ill.; T. R., of N. Y.; W. W., of Del.; H. S., of N. Y.; W. D., of Texas; P. & H., of N. Y.; F. S., of N. Y.; H. E., of N. Y.; W. S., of Pa.; J. M., of Wis.; K. & R., of Mass.; W. M. W., of N. Y.; M. H. R., of Tenn.; H. E., of Iowa; G. B., Jr., of N. Y.

Literary Notices.

The Knickerbocker—John A. Gray, 16 and 18 Jacob street, New York.—The number for October contains a number of excellent articles, and the editor, L. Gaylord Clark, still keeps the readers of his "Table" interested and amused. By-the-bye, old "Knick" offers novel inducements to subscribers, to wit, two feet of the genuine Atlantic telegraph cable to every $3 subscriber, or for every ten subscribers sent to the office, ten acres of land in one of the Western States. Rather enterprising that.

Handbook of Fruit Culture. By Thomas Gregg. New York: Fowler & Wells, 308 Broadway. This is a valuable little work, which contains all the necessary information to properly conduct an orchard; it is pleasantly written, and is illustrated with many plates. In fact, it is the very book which every farmer and horticulturist should possess, if he wants a fine fruit orchard on his land.

The Builder. New York: Wiley & Halsted. This is a weekly journal published in London, devoted to the cause of art, architecture, and building, and imported by the above agents in monthly parts. It is regarded in Great Britain as the authority on such subjects, and deserves an extensive patronage here, as there is no such periodical published in this country.

The Practical Mechanics' Journal is another valuable magazine imported by Wiley & Halsted, which is a monthly *resume* of the mechanical news and scientific intelligence. It is well illustrated, and has many able and industrious contributors who keep its pages continually up to the mark.

The Atlantic Monthly. Boston: Phillips, Sampson & Co. The first article in the October number, entitled "The New World and the New Man," is not only able but eloquent and philosophical, and should be read by every one. "The Autocrat of the Breakfast Table" bids his readers farewell, and now that the "Autocrat" has retired, we sincerely say that he has done more to secure the success of the *Atlantic* than any of its contributors.

The London Quarterly Review. New York: L. Scott & Co. This number opens with a biographical sketch of Admiral Blake, one of England's greatest naval heroes. This is followed by able papers on the "History of Civilization in England," "Iron Bridges," "Life of Wyckliffe," "Professor Blunt and his Works," "Shipwrecks," "British Museum," "British India."

The Cincinnatus—Edited by F. G. Cary, College Hill, Ohio.—This periodical devoted to all that can teach and elevate the farmer or horticulturalist still holds its place as the most useful magazine published in the West.

VALUABLE HINTS TO OUR READERS.

Receipts—When money is paid at the office for subscriptions, a receipt for it will always be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a *bona fide* acknowledgment of the receipt of their funds. The Post Office law does not allow publishers to enclose receipts in the paper.

Patent Claims—Persons desiring the claim of any invention which has been patented within fifteen years, can obtain a copy by addressing a letter to this office, stating the name of the patentee, and date of patent when known, and enclosing $1 as fee for copying.

Binding—We would suggest to those who desire to have their volumes bound, that they had better send their numbers to this office, and have them executed in a uniform style with their previous volumes. Price of binding 75 cents.

AMERICAN AND FOREIGN PATENT SOLICITORS.—Messrs. MUNN & CO., Proprietors of the Scientific American, continue to procure patents for inventors in the United States and all foreign countries on the most liberal terms. Our experience is of thirteen years' standing, and our facilities are unequaled by any other agency in the world. The long experience we have had in preparing specifications and drawings has rendered us perfectly conversant with the mode of doing business at the United States Patent Office, and with most of the inventions which have been patented. Information concerning the patentability of inventions is freely given, without charge, on sending a model or drawing and description to this office.

Consultation may be had with the firm, between nine and four o'clock, daily, at their principal office, 128 Fulton street, New York. We established, over a year ago, a Branch Office in the City of Washington, on the corner of F and Seventh streets, opposite the United States Patent Office. This office is under the general superintendence of one of the firm, and is in daily communication with the Principal Office in New York, and personal attention will be given at the Patent Office to all such cases as may require it. Inventors and others who may visit Washington, having business at the Patent Office, are cordially invited to call at our office.

We are very extensively engaged in the preparation and securing of patents in the various European countries. For the transaction of this business we have offices at Nos. 66 Chancery Lane, London; 29 Boulevard St Martin, Paris; and 26 Rue des Eperonniers, Brussels. We think we may safely say that three-fourths of all the European patents secured to American citizens are procured through our Agency.

Inventors will do well to bear in mind that the English law does not limit the issue of patents to inventors. Any one can take out a patent there.

Circulars of information concerning the proper course to be pursued in obtaining patents through our Agency, the requirements of the Patent Office, &c., may be had gratis upon application at the principal office or either of the branches.

The annexed letter from the late Commissioner of Patents we commend to the perusal of all persons interested in obtaining patents:—

Messrs. Munn & Co.—I take pleasure in stating that while I held the office of Commissioner of Patents, more than one-fourth of all the business of the office came through your hands. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill, and fidelity to the interests of your employers.

Yours, very truly, CHAS. MASON.

Communications and remittances should be addressed to MUNN & COMPANY, No. 128 Fulton street, New York.

SOLUBLE GLASS—FIRE, WATER, RUST, and Mildew-proof.—Shingle roofs, railroad bridges, &c., made fireproof; a substitute for linseed oil for paints, and for preparing a good resin and shaving soap; a varnish for instruments, gas-burners, wall paper, public documents, &c.; a cement for terra cotta, &c. Rare Metals, Aluminum, Cadmium, Nickel, Platina, Bismuth, best Plumbago, Asbestos and Manganese, for sale by DR. L. FEUCHTWANGER, 4 2* No. 143 Maiden Lane, New York.

PICKPOCKETS FOILED—A NEW THING—Sells rapidly. Send stamp for agency. DICKINSON & BATE, Hudson, Mich. 4 4*

SECOND-HAND MACHINERY AT VERY low prices for cash.—Steam Engines, Slide Lathes, Planing Machines, Drills, Slotting Machines, &c.; also, a variety of Mortising, Tenoning, and Sash Machines, &c., all warranted in good running order. Address CHARLES G. WILLCOX, 87 North Third st., Philadelphia, Pa. 3 6*

ASSIGNEES' SALE—On the 16th day of October, 1858, will be sold at public sale upon the premises, in the borough of Mount Joy, Lancaster county, Pa., the Mount Joy Car and Agricultural Implement Manufactory, consisting of a two-story brick shop, 146 by 40 feet, with frame saw-mill 100 by 25 ft., and brick engine and boiler house attached, brick foundry 70 by 40 feet, warehouses, stable, &c., siding to railroad, cranes, &c. Also 50-horse engine, belting and gearings, lathes, planers, boring mills, &c., for iron and wood, and a large stock of patterns, all nearly new. Situated in one of the best agricultural districts in the Union, on the great Pennsylvania Central Railroad. For further information apply to the undersigned, assignees of Samuel Kohr and wife, at Mount Joy, aforesaid. Sale to commence at 1 o'clock, P. M. of said day. Sale of lumber, castings, and other materials, finished and unfinished work, &c., on the 18th and 19th of October next. MARTIN B. PEIFER, 3 2* JACOB R. HOFFER.

WOODWORTH PLANING MACHINES—Sash, Tenoning and Mortising Machines, Steam Engines, Slide Lathes, Drills, &c., at greatly reduced prices. Address CHARLES H. SMITH, 135 North Third st., Philadelphia. 3 6*

STEAM ENGINES, SLIDE LATHES, Planing Machines, Drills, &c.—Orders taken for all descriptions of machines for working in wood or iron. Address CHARLES H. SMITH, Machinery Depot, 135 North Third st., Philadelphia. 3 6*

RIGHTS FOR SALE—SMITH'S PATENT Feet-Warming Device, for blacksmith's use. New, useful, and just in season. Patented August 31, 1858. State rights, or the whole of the United States for sale low. Address GEORGE W. SMITH, Aurora, Dearborn co., Ind. 3 5*

TO LUMBER MERCHANTS—FOR SALE—The Pontiac Mills, Ottawa river, Canada, with extensive limits. Mill cost $150,000, but will be sold at a great sacrifice, to wind up the estate. Liberal terms of payment. Apply to JAMES DOYLE, Aylmer, C. E., HENRY McKAY, Montreal, or to GORDON & BRUCE, New York City. 2 3*

TO BRICKMAKERS—EVERY MAN WHO has witnessed our machine—when operated by only three horses it turns out the most solid and perfect bricks at the rate of sixty per minute—pronounce it not only superior, but altogether beyond and above comparison with any other in use. For particulars address the undersigned at Philadelphia. 2 4* J. W. & E. C. JAYNE.

SECOND-HAND MACHINISTS' TOOLS—Viz., Engine and Hand Lathes, Iron Planers, Drills, Chuck Lathe, Gear Cutter and Vises, all in good order, and for sale low for cash. Also one new first-class Woodworth Planing and Matching Machine. Address FRANKLIN SKINNER, Agent, 14 Whitney avenue, New Haven, Conn. 1 13

CORLISS' PATENT STEAM ENGINES—About 250, most of them from 40 to 400 horse power, are now in operation. On application, pamphlets will be sent (by mail), containing statements of responsible manufacturing companies where these engines have been furnished, for the saving of fuel, in periods varying from 2½ to 5 years. Boilers, shafting, and gearing. CORLISS STEAM ENGINE CO., 1 4* Providence, R. I.

WOODBURY'S IMPROVED WOODWORTH Planing, Tonguing and Grooving Machines, are warranted to be vastly superior to any other machines in this country. When exhibited, they have always received the highest premium. Two gold medals have been awarded. Six patents have been granted to secure the improvements on these machines.

All sizes constantly for sale, by JAMES A. WOODBURY, 69 Sudbury street, Boston. 1 8*

RIVETS.—IRON BRIDGE, SHIP GIRDER, Boiler, Tank, Tender, Gasometer, and Stove Rivets.

Railroads, Locomotive and Machine Shops, Gasometer Manufacturers, &c., supplied with every kind of rivet used in the trade.

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ENGRAVING ON WOOD AND MECHANICAL DRAWING, by RICHARD TEN EYCK, Jr., 128 Fulton street, New York, Engraver to the Scientific American. 1 4*

ENGRAVING OF EVERY DESCRIPTION—Machinery, Patents, Maps, &c., by WM. J. BARKER, No. 23 North Sixth street, Philadelphia, Pa. 1 4*

READ THIS—HUGHES' MISSOURI HAND Corn Planter—took first premium at United States Fair, September, 1857, in trial test—now challenges all others. Patented November, 1855, and September, 1857. County and State rights for sale. Send for a circular. Real estate taken in exchange for rights. Address D. W. HUGHES, Palmyra, Mo. 1 5*

EVERY MILLWRIGHT, ALL MILL-OWNERS, and those interested in hydrodynamics, should become acquainted with the merits and principles of the improved Fourneyron Turbine Water Wheel, or the "Universal Turbine," a wheel the most economical in the use of water, and giving the highest percentage, with a partially raised gate, of any yet discovered. It gives from 75 to 97 per cent of power, according to the size of wheel and head employed. For information address S. K. BALDWIN, Laconia, N. H.

N. B.—For low falls of one, two, or three feet, also for any fall, it will surpass all others. 2 13*

WARTH'S SELF-ACTING WOOD-TURN-ING LATHES.—The best and most practical now in use; one boy will accomplish the work of four men. State and County rights for sale. Address A. WARTH, care W. H. Bertling, 23 Chambers st., New York, or the manufacturers, who have machines of all sizes on hand. Also a general assortment of machinists tools. Circulars sent. Address CARPENTER & PLASS, 479 First ave., New York. 2 13*

WOODWORTH PLANERS—IRON FRAMES to plane 18 to 24 inches wide—at $90 to $110. For sale by S. C. HILLS, 12 Platt street New York. 1 26

MACKINTOSH & WADSWORTH'S PATent Variable Governor Cut-off Valve, equally adapted to the common slide valve or puppet valve engines, also to the oscillating, cutting off the steam at any point, from the common current to three-fourths of the stroke, as the varying pressure of the steam in the boiler, or the varying amount of work to be done, requires. Shop, county and State rights for sale. For illustration see Sci. Am., Vol. XIII, No. 51. For full particulars address CRIDGE, WADSWORTH & CO., Pittsburgh, Pa. 3 tf

HARRISON'S GRIST MILLS—20, 30, 36 AND 48 inches diameter, at $100, $200, $300 and $400, with all the modern improvements. Also, Portable and Stationary Steam Engines of all sizes, suitable for said Mills. Also, Bolters, Elevators, Belting, &c., &c. Apply to S. C. HILLS, 12 Platt st., New York. 1 e3w

BAY STATE PLANER AND MATCHER, with wrought iron cutter-head and Fitts' Patent Feed Works to surface, 24 inches wide, made by J. A. FAY & CO., Worcester, Mass. 1 4*eow

BALLOONS FOR SALE—TWO NEW BALloons in complete order for ascensions. One of 1,000 lbs. power, the other 400 lbs. Apply to JOHN WISE, Lancaster, Pa. 1 4*eow

OIL! OIL! OIL!—FOR RAILROADS, STEAMERS, and for machinery and burning. Pease's Improved Machinery and Burning Oil will save fifty per cent., and will not gum. This oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough and practical test. Our most skillful engineers and machinists pronounce it superior and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The Scientific American, after several tests, pronounced it "superior to any other they have ever used for machinery." For sale only by the inventor and manufacturer, F. S. PEASE, 61 Main st., Buffalo, N. Y.

N. B.—Reliable orders filled for any part of the United States and Europe. 1 13

THE WORKS OF THE AUBIN GAS CO., (General Office, No. 44 State st., Albany, N. Y.,) as now perfected, are adapted to all materials and localities, and are in successful operation in villages, factories, and private dwellings. For full information as to cost, probable income of public works, &c., apply as above. For plans, &c., see Scientific American of March 13th. 1 26

STEAM ENGINES, STEAM BOILERS, Steam Pumps, Saw and Grist Mills, Marble Mills, Rice Mills, Quartz Mills for gold quartz, Sugar Mills, Water Wheels, Shafting and Pulleys. The largest assortment of the above in the country, kept constantly on hand by WM. BURDON, 102 Front street, Brooklyn, N. Y. 1 26

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VAIL'S SPEEDWELL IRON WORKS, Morristown, N. J., manufacture Craig's Patent Double-acting Balance Valve Oscillating Steam Engines both stationary and portable, Knowles' Patent Muley, Portable, Gang and Re-sawing Mills, Sugar and Chinese Cane Mills and Sugar Pans, Grist Mills, Mill Irons, Rich's Water-wheels, Forgings and Castings. Orders for the above, and all descriptions of labor-saving machinery will receive prompt attention. JOHN H. LIDGERWOOD & CO., 1 12* No. 9 Gold street, New York.

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TO IRON FOUNDERS AND PIPE MANU-FACTURERS.—I will sell the right to use and furnish the best Core Bars extant, for molding all kinds of Green Sand Cores on a hollow bar, for three-inch pipe and upwards. GEO. PEACOCK, Dalton, Ga. 1 6*

LAP-WELDED IRON BOILER TUBES—Prosser's Patent.—Every article necessary to drill the tube-plates and set the tubes in the best manner. THOS. PROSSER & SON, 28 Platt st., New York. 1 5*

CARY'S CELEBRATED DIRECT ACTING Self-Adjusting Rotary Force Pump, unequalled in the world for the purpose of raising and forcing water, or any other fluid. Manufactured and sold by CARY & BRAINARD, Brockport, N. Y.

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PECK'S PATENT DROP PRESS—ALL sizes, used for stamping copper or tin ware, silver ware ornaments, spoons, &c., and for forging gun work, lock work, carriage clips, &c. Also power and foot punching presses, and oval die chucks. Manufactured by MILO PECK & CO., 3 Whitney avenue, New Haven, Conn. 1 14*

STEAM WHISTLES—IMPROVED PATterns for locomotive and stationary engines. A large assortment constantly on hand. Manufactured by HAYDEN, SANDERS & CO., 1 5* 306 Pearl st., New York.

5,000 AGENTS WANTED—TO SELL four new inventions. Agents have made over $25,000 on one. Better than all other similar agencies. Send four stamps and get eighty pages particulars, gratis. EPHRAIM BROWN, 1 5* Lowell, Mass.

IRON AND COMPOSITION CASTINGS, Chilled Rolls, Mill Gearing, Fan Blowers, Trip Hammers, Shafting, Shears, Presses, India Rubber Calenders, Grinding and Cutting Machines, Turbine and Center-vent Water Wheels, also contracts made for Breast and Overshot Wood Wheels, also orders taken for the manufacture of patented machinery of all kinds, by the BIRMINGHAM IRON FOUNDRY, Birmingham, Conn. 1 tf SHELDON BASSETT, President.

J. & WM. W. CUMBERLAND'S IMPROVED Patent Metallic Oil, for machinery and burning. Warranted to last longer than sperm oil. Manufactured only by the New York Cumberland Metallic Oil Works, foot of East 24th st. Office, No. 205 Broadway, New York. Under the inventor's superintendence. N. B.—See that our brand "New York Cumberland Metallic Oil Works, foot of East 24th street," is upon every package, however small. 1 10*

GUILD & GARRISON'S STEAM PUMPS for all kinds of independent steam pumping, for sale at 55 and 57 First street, Williamsburgh, L. I., and 301 Pearl street, New York. 1 10* GUILD, GARRISON & CO.

WELLINGTON MILLS EMERY—CONsumers will look for copyright label on each cask, by whomsoever sold, and they will be sure of the best emery. Casks contain 200 pounds each. Testimonials of its superiority from Collins' Axe Co., and many others. GEO. H. GRAY & DANFORTH, 1 9* Boston, Mass.

These machines have no rival.—[Scientific American.

WHEELER & WILSON'S SEWING MA-CHINES, 343 Broadway, New York, received the highest premiums awarded in 1857 by the American Institute, New York; Maryland Institute, Baltimore; and at the Maine, Connecticut, Illinois, and Michigan State Fairs. Send for a circular containing editorial and scientific opinions, testimonials from persons of the highest social position, &c. 1 tf

IRON PLANERS AND ENGINE LATHES of all sizes, also Hand Lathes, Drills, Bolt Cutters, Gear Cutters, Chucks, &c on hand and finishing. These tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address "New Haven Manufacturing Co., New Haven, Conn." 1 13

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Science and Art.

The Grape Vine Disease.

The following new and important facts concerning the nature of that great pest of the vine grower, *oidium*, and its operations upon the vine plants, form the substance of a paper lately presented to the Academy of Sciences at Paris, by M. de la Vergne. "The *oidium* does not spread to any alarming extent, except when the temperature is, day and night, above 68° Fah., as is the case in the neighborhood of Bordeaux, from the end of May to that of September. Whenever the temperature is lowered considerably, the growth of the *oidium*, is stopped, to acquire fresh vigor as soon as the sun adds warmth to the humidity with which the parasite is saturated. The same vine plant is not equally subject to the attacks of the *oidium*, hence the operation of sulphuring need not extend to every point attacked. The action of the sulphur is circumscribed, and almost strictly local. Its curative properties have no effect below the temperature of 68°, hence the warmth necessary to its action is precisely that which favors the growth of the *oidium*. As wind and rain carry off the sulphur, this substance can only protect the vine during a limited period. Sulphur destroys the shoots of *oidium* of recent formation and thus prevents it from spreading; and as no vineyard is attacked by the *oidium* at once throughout its whole extent, the vines which first betray the presence of the enemy, should point out the proper time of sulphuring. Too much sulphur should not be applied as the particles of flower of sulphur, contain minute portions of sulphuric acid, which, when accumulated to excess will burn the plant and often injure it irretrievably. Whenever a white or farinaceous spot appears on the leaves or stems of plants, situated near buildings or ditches, or trees casting a shade over them, in a temperature exceeding 68° by night as well as by day, it is certain that all the vines are attacked, although the eye cannot discover a trace of the fungus elsewhere, and then every plant of the vineyard should be sulphured."

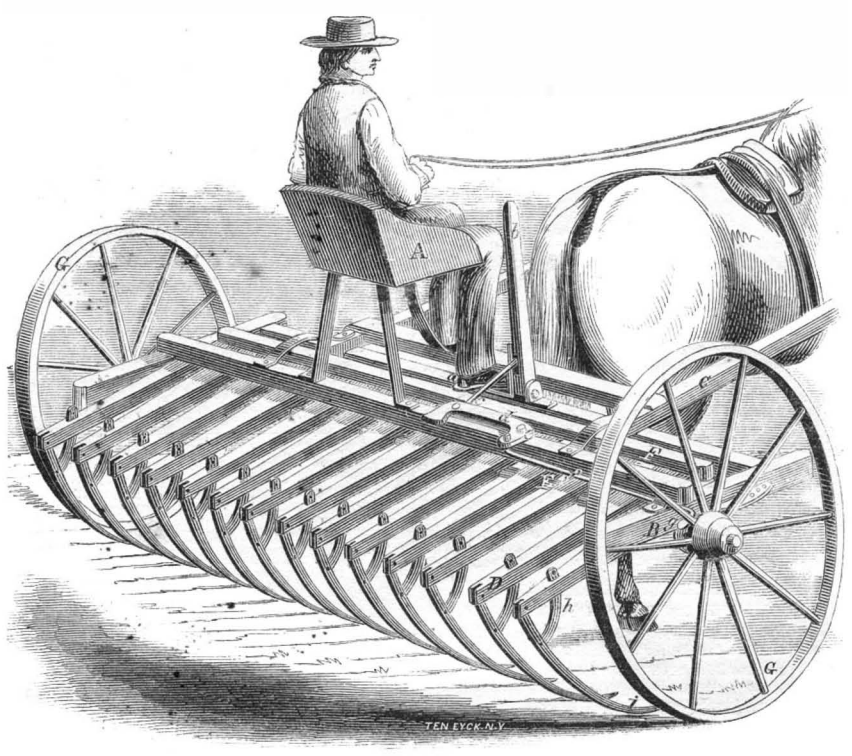
In connection with the above, *Galignani's Messenger* translates a few practical remarks just published by the committee of the *Academia dei Georjili*, of Florence, appointed to enquire into the results obtained from sulphur during the years 1856 and 1857. The committee state that the wines were made excellent; the slightly sulphurous taste they sometimes had, disappeared in a short time. The washing of the grapes immediately after the tying of the vines, with from five to seven pounds of glue dissolved in 100 pounds of water, and with the addition of a little flour or clay, had produced excellent effects. Laying the vines down, so as to bring the grapes as near as possible to the ground, had also been found advantageous. Lastly, the report mentions a curious fact, that the grafting of the American wines upon those of Tuscany produces a great increase in the quantity of grapes, and that vines so grafted are little liable, if at all, to be invaded by the *oidium*. This system, however, is attended with two serious drawbacks—the vine grower loses the produce of two years, and the wine obtained, though extremely abundant, is inferior in quality.

Improved Horse Rake.

The great objection to the majority of horse rakes is, that they roll and "rope" the material they gather, leaving it in a condition too compact for properly curing, and making it laborious to "fork up" afterwards. The subject of our engraving avoids all these objections, and leaves its gatherings perfectly light, with the butts turned up to the sun, and this without any more labor from the attendant than to drive the horse and sit in the seat.

The arms, D, to which the rake teeth, *i*, are attached, are connected to the axle, E, of the machine, and they are free to move upon it, yielding to any unevenness of ground, and kept to their work by their own gravity. The teeth, *i*, are held in position by the quadrants, *h*, which are secured to D by wooden pins, these being the only things that can break in case of contact with obstructions, such as roots, &c., the whole being mounted upon wheels, G, with shafts, C, for a horse, and a seat, A, for the driver. At one end of the axle is a clutch, *g*, secured by a key or feather, and free to slide. This clutch is made to mash into a corresponding one upon the wheel. To this clutch is attached a forked

SQUIRE'S SELF-DISCHARGING HORSE RAKE.



lever linked by a rod to a cranked lever, *d*, upon the frame, which is connected to a handle, *b*, or foot-piece, *a*, by a rod, *c*, brought to the side of the driver's seat. Upon the axle, a short distance from each end, are two arms, made fast thereon, so as to move or revolve with the axle. At the opposite ends of these arms is connected a bar, F, extending across the whole width of the rake, and made to come in contact with the same, when it is desired to elevate the rake. There is also a short arm firmly secured to the axle, intermediate between the arms supporting the elevating bar, and extending out in an opposite direction.

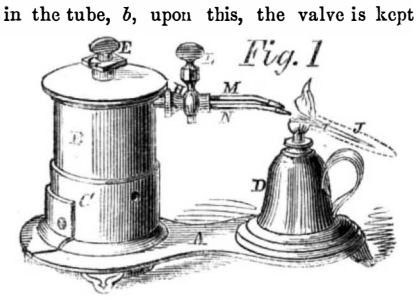
Its operation is as follows:—The driver being mounted in his seat, seeing his rake full, has only to pull the handle towards him. This will throw the clutch in connection with the one upon the wheel; this revolves the axle, presses the elevating bar upon the rake arms, thus elevating the rakes, and at the same time traveling away from its load. When the rake is sufficiently elevated, the short arm is brought in contact with the opposite end of the cranked lever, which throws back the clutch, and allows the rake to fall back to its work by its own gravity.

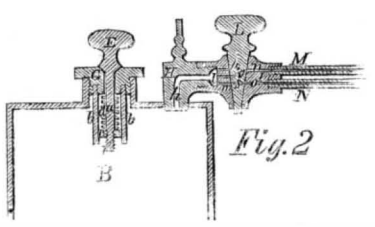
Its efficiency and superiority has been fully demonstrated and tested during the past season. It is the invention of J. J. Squire, of Prairie Lawn, Bunker Hill, Ill., and was patented December 23, 1856. Further information can be obtained by addressing the inventor as above.

Hollely's Blowpipe.

This most useful aid to the chemist, metallurgist, and every one who works in metals, has received some improvements lately, which especially fit it for those who prefer the self-acting one to that which is supplied with air from the mouth. This is illustrated in our engravings, of which Fig. 1 is a perspective view, and Fig. 2 a vertical section of part of the invention

A is a stand of cast iron, having a circular support, C, rising from it; inside this is a small lamp, which heats the receptacle, B, that contains alcohol, and is provided with a safety valve, E. D is the lamp, the flame of which is to be directed on to the object to be fused or melted. The blowpipe may be attached to B, as seen in either Figs. 1 or 2, and to the tube, H, is secured a stop cock, L, from which project two tubes, M N, one broad, producing the broad flame, J, and one narrow, producing the fine flame, I. The lamp in C heats the alcohol in B, the vapor of which, being forced through the pipes and nozzles, M N, on to the flame of the lamp, D, becoming ignited forms a blast or blowpipe flame of great heating power. To prevent the bursting of the vessel, B, from the pressure of the alcohol vapor within, the safety valve, E, is added, passing through the nut, G, the top of which forms a valve seat. From E extends a rod, *a*, to the bottom of which is screwed a plate, *c*, and by the pressure of the spring, *d*, in the tube, *b*, upon this, the valve is kept





close to its seat; but when the pressure becomes greater than the power of the spring, the valve is elevated, and the vapor escapes. The pressure can be regulated by the compression of the spring, but it is so arranged that it cannot be compressed beyond a certain point.

The vapor flows through the passage, *h*, in H, to the space, *l*, next the cock, where it can flow by means of three holes, *m*, through two holes, *v s*, into both tubes, *n o*, of the nozzle tubes, M N, as seen in Fig. 2, so as to produce a very broad blast, or through the passages, *p* or *s*, so as to produce either a very fine or moderately broad flame. All this is regulated by turning L into the desired position.

This is a very simple, cheap and safe spirit blowpipe, and we should think will be extensively patronized by dentists and others, who are in the habit of using such apparatus.

It is the invention of Joseph Hollely, of No. 25 Furman st., Brooklyn, L. I., and he will be happy to furnish any further information. It was patented March 16, 1858.

A Telegraphic Problem.

Whoever originated the following deserves to have his name handed down to posterity: If a dispatch from England to America gains on the sun so as to reach here 4½ hours by the clock before it left England, at what time would it arrive at the point of departure, were a cable carried entirely around the world? Would it not arrive the day before it left, less only the time exhausted in making the circuit? If so, then, with a continuous telegraph line around the world, why not send a dispatch around and around until it reached back to Adam, and let him know what his children are about these latter days?

Hick's Gas Burner.

In our notice of this invention last week we did not do its merits full justice. We said that the gain over the common burner was nearly one-third, whereas from the subjoined letter it will be seen that it is a great deal more:—

NEW YORK, 1858.

I have examined with great care a new form of gas burner, invented and patented by L. E. Hicks, of this city. My experiments prove that with a pressure similar to that at which gas is generally delivered to customers in large cities, its economy over the burners in ordinary use in the consumption of gas for equal illuminating powers is in the ratio of 232 to 100. W. H. ELLET, Chemist.

Laboratory of the Manhattan Gas Light Co.

NEW Prospectus

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